

Combat Stress Reaction and Morale in RFC/RAF Aircrew 1914-1918

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Abstract

There are many studies of the air campaigns of the first World War: almost all have concentrated on the strategic and tactical issues, on the technical development of aircraft or the skill and daring of the aircrew concerned.

The effects of the dangers of flying and air combat, which tested aircrew to their limits both physical and mental with consequent psychological disorders have been ignored.

This study examined and analysed the operations of the RFC/RAF over the Western Front from 1914-1918 with the aim of establishing the incidence of aircrew failure for nervous disorders.

The factors affecting the psychological and psychiatric reactions of aircrew to combat have been examined. The significance of morale as a factor affecting the psychological responses of aircrew has been assessed and the effects of leadership, training, fatigue and aircraft performance and reliability are explored in relation to aircrew failure due to psychological disorder. The outcomes of this thesis were compared to similar studies for Second World War Aircrew.

Medical and casualty records, official histories and operational reports have been used in conjunction with personal accounts and memoirs to establish the prime causal factors for psychological disorder in aircrew and its incidence in the RFC/RAF on the Western Front. The treatment and disposal of aircrew diagnosed with 'flying sickness' have been described and the results evaluated. The incidence of breakdown has been compared with similar studies for Second World War Aircrew.

It concludes that the incidence of failure due to psychological disorder for the years 1914-1917, was low and manageable. However, in the last year of the war, the incidence not only vastly increased but became a significant part of the total wastage rate and seriously affected RAF strength on the Western Front.

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Introduction and Historiography

This thesis explores the extent of psychological disorders suffered by flying personnel of the Royal Flying Corps/Royal Air Force during the First World War. It responds to questions relating to aircrew stress, morale, and combat effectiveness. The objective is to establish the incidence of these disorders and to determine the main causal factors influencing aircrew breakdown in combat. Several writers have addressed this question, but always in individual cases; no one has made any attempt to establish the incidence of aircrew failure for psychological reasons, or its impact on the operational efficiency of the RFC/RAF.

To meet this objective this study will examine and analyse the operations of the squadrons flying over the Western Front from 1914-1918 and identify the demands of air warfare on RFC/RAF pilots and observers and their response to combat stress.

This introductory chapter will explain the context to the RFC/RAF's operations over the Western Front and will define the medical and operational aspects of the study. The sources used will be described and the relevant literature of the air war and the psychological aspects of combat considered. The chapter will conclude with an account of the structure of the thesis and methodology

Background

The First World War was the first in which aircraft had a significant impact on the operations of armies in the field. The early years of the twentieth century were also a time of rapid development in aviation (enhanced by the war) and aircrew had to adapt to major advances in the operational performance of aircraft. Consequently, aircrew had not only to deal with the technical challenge of the new weapon and the effects of a new and very demanding environment, but also the considerable stress of combat.

Aeroplanes were first used as a weapon in the Turkish-Italy conflict of 1911-1912, when on 26th October 1911 an Italian aircraft patrol discovered and reported advancing Turkish troops. In February 1912 a Captain Piazza fitted a camera to his Bleriot aircraft and photographed enemy positions, later grenades were dropped in enemy positions.¹ In Britain, military aviation was mostly concerned with balloon operations, until in 1912, partly as a response to public concern about the development of aviation in France and Germany, the Royal Flying Corps was formed with balloon and aircraft wings. At the start of the First World War the RFC had a strength of four squadrons and about 40 useful aircraft. However, like

¹ M. Paris, 'The First Air Wars-North Africa and the Balkans' *Journal of Contemporary History* Vol 3 (1991) pp. 97-109.

all military authorities in Britain, Brigadier-General Sir David Henderson Commander RFC, believed it would be a short war and accordingly sent all four existing RFC squadrons to support the BEF in France, leaving behind only a small flying training organization.² This tiny force was in fact the harbinger of the largest air force of the First World War. In May 1918, the British Armies in France would be supported by ninety-three squadrons engaged in reconnaissance, artillery spotting, photography, bombing, low level ground attack and all protected by hundreds of fighters.³

The first five months of war demonstrated the usefulness of the aircraft for reconnaissance to both sides. At first neither side attempted to interfere with the enemy's aircraft, although by early 1915, aircraft were carrying not only the crew's personal weapons, but sometimes machine guns fitted in the observer's position. This crude ad-hoc system was not successful, and, in any case, the early aircraft could not easily carry the extra weight of weapons and ammunition. However, by early 1915 improved engines and better aircraft enabled weapons designed for aircraft to be carried and serious attempts were made to inhibit enemy air activities. The fighter aircraft was born. In 1916, the great battles of the

² W. Raleigh, *Official History of The War: The War In The Air - Volume I* (six Volumes) (HMSO, 1927-1936), pp.283-292. Only first volume by Raleigh, remainder H A Jones. (Hereafter *TWITA*)

³ Jones, *TWITA*, Appendices. Appendix XXVI p.126. The RAF also had a large training organization in UK together with the Home Defence Squadrons and 17 squadrons covering, the Middle East, Balkans and India

Somme and Verdun were the catalyst for intense battles in the air now involving specialist aircraft and better trained aircrew. At first casualties were light, but the bearable rates of 1915 were followed by heavy losses in 1916, (many due to operations over the Somme battlefield) becoming serious in 1917 and by mid-1918 wastage from air fighting and accidents was close to being unsustainable. Additionally, from June 1918, the bombing operations of the Independent Force, which had little effect on Germany's war effort, added many aircrew casualties to the RAF's total.

The resultant demand for replacement aircrew, at a time when all services and all arms were desperate for manpower, produced a cycle of instability, large gaps in squadron crews were filled by inadequately trained aircrew, who soon became casualties themselves and were replaced with more inadequately trained aircrew, which resulted in casualty rates in some squadrons so heavy that they were taken out of the line for short periods. This turbulence undoubtedly had deleterious effects on the morale and fighting efficiency of the aircrew concerned.

By the end of 1916, an additional factor significantly affecting squadron aircrew numbers, was the number of pilots and observers removed from flying duties because of psychological disorder.

Although psychological breakdown in combatants had been recognized as an outcome of battles since at least the Napoleonic war, the British army was surprised

by the emergence and especially the extent, of battle neurosis which came to be called 'shell shock' in soldiers of the British Expeditionary Force.⁴

The newly established Royal Flying Corps' medical officers also found that as early as 1915, before any serious fighting had occurred in the air war, that pilots and observers were showing symptoms of psychological disorders arising from exposure to flying and combat.⁵ The hazardous and exhausting nature of flying duties was recognized; but a preoccupation with the physical aspects of flight such as cold, fatigue, noise, effects of slipstream and problems with lack of oxygen, overshadowed consideration of the mental stresses of flying and fighting.

In fact, by the end of 1915, six aircrew had already been removed from flying duties suffering from nervous disorders: five suffering from Neurasthenia and one diagnosed as shell shock (although he had never served in any ground unit). Removals for nervous reasons increased in each year of fighting until by September 1918, when the wastage in that month from KIA and missing was 389 aircrew, a further 102 were removed suffering from Flying Sickness as a result of combat stress.

⁴ E Jones & S Wessely, *Shell Shock to PTSD, Military Psychiatry from 1900 to the Gulf War* (London, 2005) pp 22-24; R H Ahrenfeldt, *Psychiatry in the British Army in the Second World War* (London, 1958) pp.4-6; C Corns & J Hughes-Wilson, *Blindfold and Alone* (London, 2001) pp.309-311.

⁵ *Royal Air Force Museum Archives. Classification, Casualty Cards - Personnel/Incident*, Dunn, Ferris, Welsh (Hereafter RAFM CC)

The Official History of the War in the Air refers to the aviator's fear of:

fire, bone-crunching crashes caused by mechanical failure, the deadly impact of multiple fighter clashes, or the prospect of being set upon by a swarm of enemy machines.⁶

It is the effects of that fear, the psychological responses of aircrew to combat and the disorders which result, which will be analysed in this study. Unlike other studies it will exploit medical evidence and examine the psychological origins of those fears.

Sources and Historiography

Sources

As noted above this thesis is concerned with the responses of aircrew of the RFC (from April 1918 RAF), to the strains of air combat, physical and mental. Accordingly, it is necessary to examine the development of the air war and the involvement and experiences of aircrew over the western front.

The original evidence of the RFC's operations in the war, including squadron and wing reports and casualty reports and returns is to be found in the Air 1 series of files in the National Archives at Kew. Most of the files relating to the RFC and the Royal Naval Air Service were brought together during the preparation of the

⁶ Raleigh, *TWITA* Volume I, p.13.

Official History of the war in the air. (W Raleigh and after his death H A Jones.)⁷ Casualty reports and summaries for 1916/17/18 are in Air1/843-865 (with some odd numbers interspersed). The Australian casualties are in Air1/970. There are also lists of Canadian casualties in Air1/967. Air1/76 contains service records of RAF Officers and Air /79 records of RFC Officers. Although the operational files are indispensable for accurate coverage of air operations, they are in the main purely factual accounts of actions and combats and few personal attitudes are apparent. The casualty lists, which are extensive and cover casualties by brigade, by wing and squadron and do not always agree. Accordingly, in this work for the most part statistics for operational losses and wounded together with details of combats and accidents, have been taken from Henshaw's accurate and comprehensive work: *The Sky Their Battlefield* (2014):⁸ (compiled from official sources), checking the Air 1 records as necessary.

The prime source for this work is the unique *Casualty Card and Incident Cards Archive* held at the Royal Air Force Museum. During the First world War a casualty card was raised for each officer who was killed in action or accident, was wounded or admitted to hospital for other illnesses. These cards are the only

⁷ See below for assessment of that history.

⁸ T. Henshaw, *The Sky Their Battlefield: Air Fighting and Air Casualties of the Great War* (Fetubi Books, 2014)

complete record of RFC/RAF officers removed from the front suffering from psychological disability (flying sickness). The cards show officer's name, initials and unit and the initial medical diagnosis and disposition noting subsequent moves to field or general hospital or return to Home establishment. Medical cards also record a return to duty date, if applicable. The unit identification enables relevant squadron and operational records to be used to note an officer's involvement in the air war. Several cards show hospital treatment extending to 1922. In the case of 'Incident' cards an account of the cause of the injury or death is given (eg Crash on takeoff). There are upwards of 27,000 RFC/RAF officers Personal and Incident cards in the archive. All were accessed over a period of six months and regularly consulted as necessary thereafter. These Casualty cards are a unique source of medical information about the subjects of this study and have enabled every recorded case of 'Flying Sickness' in the RFC/RAF in the First World to be examined.⁹ Additionally, the cards provide an accurate source for statistical information of aircrew breakdown in World War One. Other sources were used in order to obtain further individual details and case studies. These include, The London Gazette, Army and RAF lists and biographies and personal memoirs and AP3139, together with Gilcrest's 1918 report. (noted below)

⁹ The term Flying Sickness encompasses all descriptions of aircrew psychological disability used in the First World War.

This thesis focuses on the psychological and psychiatric outcomes of exposure to flying and combat stress. It is concerned with psychological ‘breakdown’ which if occurring to BEF personnel was defined (misleadingly) as ‘shell shock’.

The 1922 *War Office Enquiry into Shell Shock* did not feel that that name was appropriate and felt that the condition would be better defined as:

emotional shock, either acute in men with a neuro-pathic predisposition or developing slowly as a result of prolonged strain and terrifying experience. The final breakdown being sometimes brought about by some relatively trivial cause. (OR) Nervous and mental exhaustion, the result of prolonged strain and hardship.¹⁰

Regarding the RFC, the consultant in psychological medicine to the RAF (W H R Rivers) in his evidence to the committee said that in his view officers who broke down were usually suffering from ‘anxiety neurosis’ which might be combined with hysteria.¹¹ In fact the description/diagnosis used in the RFC to identify breakdown varied considerably until December 1916 when the term ‘Flying Sickness’ became standard.

Primary published sources concerning psychological and psychiatric disabilities resulting from combat and/or flying stress are extensive. Those used in this study include *AP 3139 Psychological Disorders in Flying Personnel of the Royal Air*

¹⁰ Cmd 1734 *Report Of The War Office Committee Of Enquiry Into ‘Shell Shock’* (HMSO, 1922) p.92

¹¹ Cmd 1734 p.56.

Investigated During the War 1939-45 (HMSO,1947) Although the studies in this AP concern the Second World War many chapters reprise the World War One position, and comprehensively describe and explain the basis of psychological disorders. Two sources which specifically address First World War aircrew are, firstly the *Official Medical History*¹² and secondly, H. G. Anderson's early study of the mental and physical aspects of the individual in the air.¹³ Anderson's detailed evidence of the responses of pilots to their first exposure to flying and the detailed accounts of those pilots who during their training, suffer psychological disorders or otherwise fail to reach the required standard is of great evidential value. Other contemporaneous primary sources are reports of the *Medical Research Council*, (1920), Meyer's book on *Shell Shock* (1921) and Gilcrest's analysis of breakdown in aircrew (1918). Gilcrest's report is especially valuable as his subjects were pilots and observers who had been removed from flying duties suffering from war neurosis (flying Sickness)¹⁴ Other useful secondary works are: E J Dearnally & A J Warr, *Aircrew Stress in Wartime Operations*. (1947), S C Rexford-Welch, *Medical History of the Second World War, US Air Force*

¹² W. P. Macpherson. *History of the Great War Medical Services: Volume II Diseases of the Mind, Volume III Aviation* (HMSO, 1923)

¹³ H. G. Anderson, *The Medical and Surgical Aspects of Aviation* (London,1919)

¹⁴ *Medical Council Reports No 53 Medical Problems of Flying, Reports I-VII* (1920); C. S. Meyers, *Shell Shock in France 1914-1918* (London, 1920); N. S. Gilcrest 'An Analysis of Causes of Breakdown in Flying' *The British Medical Journal*, Volume 2 No 3015 (1918)

Historical Study No 78. Morale in the AAF in World War Two (1953) and R R Grinkler & J P Spiegel *Men under Stress* (1945). This book is a comprehensive study of aircrew of the United States Army Air Force and their response to combat stress, including sixty-five detailed case studies.¹⁵ One valuable source is the series of near contemporaneous World War One reports, not published until 1943. *The Neurosis in War Edited by Emanuel Miller*. This work is a collection of reports and essays which contain many of the essential areas of the study of combat stress, including the onset of symptoms, treatment in the field and morale.¹⁶ Further published prime material comprising articles and published lectures by psychiatrists which has been accessed include W H Rivers, 'The Repression of War Experience', E Jones, 'LMF, The use of psychiatric Stigma in the RAF in the Second World War' and with S Wessely, 'Battle for the Mind world War One and the birth of military psychiatry'.¹⁷

¹⁵ E. J. Dearnally & P. B. Warr. Eds, *Aircrew Stress in Wartime Operations* (HMSO, 1948); S. C. Rexford-Welch, *Medical History of the Second World War the Royal Airforce Medical Services Volume II Commands* (HMSO, 1955); R. R. Grinker & J. P. Spiegel, *Men Under Stress* (New York, 1945)

¹⁶ E. Miller, *The Neurosis in War* (New York, 1943)

¹⁷ W H R Rivers, 'The Repression of War Experience' *The Lancet* Feb 2 1918 this is the printed version of an address to the Royal Society of Medicine setting out his method of treating war-neurosis; E Jones, 'LMF, The use of Psychiatric Stigma in the RAF in the Second World War' *The Journal of Military History* Vol 70 (2) (2006) pp.439-458; E Jones & S Wessely 'Battle for the Mind: World War 1 and the birth of military psychiatry' *Lancet* Vol 348 (2014) pp.1708-1714.

Many personal memoirs which included examples of psychological responses to stress were used, including: Mannock (diary 1923): Jones (1954), Gould-Lee (1969), Lewis (1936).¹⁸

Many articles and reports of direct relevance were studied including: C N Baker, '*A Regimental Officers Analysis of Morale*' (1962), M D Collins '*A fear of flying, Diagnosing traumatic neurosis among British Aviators of the Great War*' (2015)', E Jones & S Wessely '*Forward Psychiatry in the Military*' (2003) and, D. Stafford-Clark '*Morale And Flying Experience: Results of a Wartime Study*' (1949)¹⁹ The articles by Edgar Jones and Simon Wessley (and also their book, '*Shell Shock to PTSD*' and the report of Stafford-Clark are essential to the understanding of aircrew psychological disorders.

A perhaps unusual but very useful source for RFC crews attitude to flying and fighting is V M Yeats's autobiographical novel '*Winged Victory*'²⁰ It is considered that his account of operations in the air is factual and substantially

¹⁸ E. Mannock Personal *Diary* Annotated F. Oughton (London,1966); I. Jones *Tiger Squadron* (London,1954); A. Gould-Lee *Open Cockpit* (London,1969); C. Lewis *Sagittarius Rising* (London, 1936,1995)

¹⁹ C. N. Barker, Lt Col 'A Regimental Officer's Analysis of Morale' *RUSI Journal* 107 (1962); M. D. Collins 'A fear of flying: diagnosing traumatic neurosis among British aviators of the great war' *First World War Studies*. Volume I No 2 (2015); D. Stafford-Clark 'Morale and Flying Experience: results of a Wartime Study' *The British Journal of Psychiatry Volume 95* (1949) E. Jones & S. Wessely "'Forward Psychiatry" in the Military: its Origins and Effectiveness' *Journal of Traumatic Stress Volume 16 No 4* (2003)

²⁰ Y M Yeates, *Winged Victory* (London 1934,2010)

accurate: but more importantly for this study is the fact that Yeates was removed from flying duties suffering from 'Flying Sickness' and his book is in fact a valuable personal account of the effects of combat stress.

Relevant and useful journals, often publishing personal accounts and interviews of aircrew are the '*Cross & Cockade*': The Journal of the First World War Aviation Historical Society and the *Journal of the Royal Air Force Historical Society*.

Other journals with important contributions on The First World War in the air and those involved are: *Royal United Service Journal*, *Journal of Contemporary History* *Journal of Military History*, *Journal of Strategic Studies*, and *Air Power*.

The psychiatric and psychological aspect of aircrew responses to combat stress in, both World Wars, is considered in many useful articles in: *The British Medical Journal*, *British Journal of Psychiatry*, *The Lancet*, *British Heart Journal*. *Journal of the Royal Society of Medicine*. *Journal of Traumatic Stress* and *The American Journal of Sociology*.

The recorded interviews of World War One RFC veterans held at the Imperial War Museum Sound Archive have been accessed and several firsthand accounts of the air war have been used. Additionally, several personal accounts of combat stress and its impact on aircrew recorded in a documentary shown on BBC West in 1987, have been accessed. Oral accounts and TV interviews certainly provide

valuable personal accounts of combat. However, the oral accounts, (four accessed) were all produced many years after the event and with respect to the participants own responses to combat, did not note any psychological effects. On the other hand, the documentary '*Cavalry of the Clouds*'²¹ an account of the air war on the western front, which includes live interviews with RFC/RAF participants in that campaign did provide useful insights into the psychological reactions to combat. In several cases these interviews can be compared with their memoirs.

Historiography

The historical treatment of the first war in the air to a large extent revolves round the supposed glamour of the fighter pilots. There is a lasting view that air fighting in World War One saw the last echoes of chivalry, which may well have been given credibility by the words of Prime Minister Lloyd George, when in October 1917, he said:

'They are the cavalry of the clouds. High above the squalor and the mud.... They fight out the eternal issues of right and wrong.... They are the Knighthood of this war, without fear and without reproach. They recall all the old legends of chivalry....by the nobility of their spirit'²²

²¹*Cavalry of the Clouds* Documentary Film TV West 1987

²²Quoted in J. Sweetman *Cavalry of the Clouds Air war over Europe* (Stroud, 2012) p 9 It is fair to add that Sweetman as at pains to show that was not how it was.

There is certainly a common opinion that only single seater fighter aircraft were involved. In Sweetman's book *Cavalry of the Clouds*, a history of the air war, observers are not mentioned at all, reconnaissance rarely. On the other hand, some historians have focused upon the question of 'air power' and its arrival in war, but these often give little space to the details of the action.²³ Many accounts of the air war concentrate on the lives and exploits of the 'Aces' both British and German, and the roles of the air forces and their 'operations' have in the main been left to official histories.

The first of those, the British, produced in six volumes between 1922 and 1937 has several shortcomings.²⁴ The original author, Sir Walter Raleigh, a Professor of English at Oxford University, knew nothing about aviation. He completed the first volume bringing the story of aviation to 1914. His approach was something of the social historian and his account of the beginnings of flight includes some flowery language that does not help understanding. The operations of the RFC take up only the last quarter of volume one and is a somewhat muddled account. Raleigh died after producing this first volume and the role of official air historian fell to his research assistant H A Jones. The handover was not straightforward;

²³M. Dean (Sir) *The Royal Air Force and Two World Wars* (London, 1979) B. Collier, *A history of Air Power* (London, 1974)

²⁴Sir Walter Raleigh & H. A. Jones *Official History of The War. The War in the Air. Being the part played in the Great War by the Royal Air Force, 6 volumes + volume of appendices* (Oxford, 1922-1937)

Trenchard, wanting to ensure his version of the contribution of the air service was not lost, first approached Maurice Baring, his wartime assistant. Baring refused and Trenchard asked T E Lawrence with whom he was friendly. Trenchard knew that Lawrence wished to return to the service and felt that this could be achieved by Lawrence being its 'official historian'. However, Lawrence also refused. So, by default Jones got the job. His history undoubtedly met Trenchard's main objective, that of ensuring that the RAF's contribution to the war effort was fully recognized.²⁵ Jones also had the advantage of service with the RFC in the war as an observer with Number 17 Squadron, he had played a small but heroic part in the campaign in Macedonia.²⁶ His history is a factual straightforward and sometimes dull narrative. He does not give source references, but as noted above he was provided with all the relevant material much retained in Air 1. One difficulty with using his work is that it does not deal with operations in any coherent sequence, or other matters such as training or supply in any rational order. Thus, the air war in France is covered in different volumes mixed with chapters on other areas of action (Middle East, Italy) and of entirely different subjects (Home Defence). It does mean that, for almost any subject, it is necessary to consult all six volumes and the appendices. Jones took until 1937 to complete his work and in that time the only

²⁵For an account of the search for a successor to Raleigh, see A. Boyle *Trenchard* (London,1962) pp 513-516 and J Wilson, *Lawrence of Arabia* The Authorised Biography (London, 1988) p 741

²⁶G. Norris., *The Royal Flying Corps* (London,1965) pp 198-199

other operational history of the air war in France produced was the first Australian *Official History* published in 1923.²⁷ Unlike the other British colonial countries whose aircrew served with the RFC, Australia formed its own air service. This consisted of four squadrons: one serving in the Middle East and three under the operational control of the RFC in France. F M Cutlack, a former Intelligence Officer with the 3rd Division of the Australian Imperial Force, produced a detailed narrative history based on squadron and wing war diaries and personal accounts. It is only concerned with the Australian squadrons. Nevertheless, because the Australian Flying Corps (AFC) squadrons operated under RFC operational control it is an especially useful source for RFC operations. It is also much easier to use than Jones, being arranged in a strictly chronological order. One other notable difference in approach is the appendices, unlike Jones, where most appendices are statistical, Cutlack has produced what amount to useful short studies on: the aircraft used in the war: (British, German and French), Training in RFC/ RAF, and the organization of, and the roles of ground officers in the RAF. A second *Official Australian History* was produced for the Centenary of the Great War.²⁸ Although this history is ostensibly about the operations of the squadrons of the AFC serving

²⁷ E. M. Cutlack., *The Official History of Australia In The War Of 1914-1918 Volume VIIIIP: The Australian Flying Corps.* (University of Queensland Press, 1923)

²⁸ M. Molkenstin., *The Centenary History of Australia and The Great War Volume 1; Australia And The War In The Air* (Oxford, 2014) the first of five volumes.

in the Middle East and France. In fact, as the squadrons in France were always part of RFC wings commanded by the RFC, their operations were always part of the RFC effort. This history in several ways more comprehensive than either Jones or Cutlack. Account is taken of the political and strategic background and details of the results of rapid RFC expansion in 1916, leading to the problems arising from inadequately trained pilots are covered. Additionally, Molkentin also notes the medical aspects of the selection and training of aircrew, and albeit briefly, discuss casualties and morale.

All the British colonies gave considerable support to the war effort and provided aircrew for the RFC including pilots from New Zealand, South Africa, and Australia. However, Canadian aircrew made an exceptional contribution to the air war and by early 1918 some 25% of pilots on the Western Front were from the training schools in Canada. Unlike Australia, Canada did not form its own air force, and instead (after some political wrangling) concentrated upon training aircrew at home, for supply to the RFC/RAF. Despite this significant effort it was not until 1980 that the Canadian Official History was produced.²⁹

²⁹ S F Wise., *The Official History of the Royal Canadian Air Force Volume I, Canadian Airman and the First World War* (Toronto, 1980)

S F Wise (a Second World War Pilot) produced an exhaustive study of the Canadian contribution on all fronts (including the RNAS, which also received many Canadian aircrew) and set out to record the activities of Canadians in the war. As with the Australian histories the large number of aircrew involved in all theatres and with all areas of RFC work, meant that the history was in effect another operational history of the war in the air. Wise takes a broad view of the war in the air and takes account of political and strategic matters as well as operations. This history is a factual, comprehensive and readable account of all RFC/RAF operations in France and is the best history of the air war, An important area covered by this thesis the 'strategic' bombing campaign carried out by the Independent Force in 1918 and this campaign is addressed by Jones and Molkentin as well as Wise, Many Canadian aircrew served in the squadrons which took part in the campaign and suffered many casualties. Wise is critical of Trenchard's offensive policy and indeed the concept of strategic bombing so, it is right to note that this history was written at a time when Canada was engaged in controversy about Canada's involvement in the RAF's Second World War bombing campaign against Germany. This probably explains why Wise makes the point that Canadian aircrew were not responsible for either the strategy or the tactics of the RFC. Nevertheless, Wise's history is the most useful of the operational accounts of the war in the air.

As noted, the greater part of the historiography of the Great War in the air concerns the newsworthy air fighting and the achievements of the ‘Aces’. Most of these accounts ignore the psychological effects on the pilots and observers involved, in fact most also ignore the fact that two-seated aircraft existed. An exception to this is the detailed account of the air war by Ralph Barker.³⁰ He covers all the major battles from Mons to the final battles over the German retreat. This history is described as an ‘anecdotal’ history,³¹ but he has produced a comprehensive account of operations and he does acknowledge and describe the psychological effects of air warfare. A general history of the air campaigns of the Great War, which unusually includes political, industrial and cultural aspects of aviation as well as operations is Morrow’s *The Great War in the Air*.³² He covers the war on the ground and in the air chronologically, giving each year of the war a separate section; within the section the war is addressed from each of the major nations involved in the air, Britain, France, Germany and Russia. Austria-Hungary and Italy. He emphasizes the importance of the industrial backing required to fight a technological war and the cultural aspects of recruitment of

³⁰ R. Barker. *The Royal Flying Corps in World War One* (London,2002)

³¹P Garland, *Daily Telegraph Daily Telegraph Book of the Year*

³²J. M. Morrow., *The Great War in the Air: Military Aviation from 1909 to 1921* (Smithsonian Press USA, 1993)

aircrew. He is one of few to note the psychological strains on those pilots who became aces.

The historiography of 'shell-shock' is immense. The term was first used by Lt Col C S Myers, who was consultant psychologist to the British Army in France. He used the term because the first patients he saw had been in or near explosions which seemed to have caused the symptoms of neurosis shown in these men; that term was soon realized to be inappropriate and by 1916 it was changed to 'nervous shock.' This also was unsatisfactory and 'shell Shock Sick' was used for non-battle casualties and 'shell shock nervous' for battle-casualties.³³ Apart from the official medical histories and the report of the War Office Committee on Shell Shock noted above, Ahrenfeldt's *History of Psychiatry in World War Two* has a very useful account of the Army's difficulty in World War One in accepting that combatants suffered psychiatric disorders resulting from combat stress.³⁴ Although the historiography of shell shock is extensive very few works cover the psychological disorders of combatants in units other than forces engaged in the ground offensive, mainly infantry and artillery. However, Winter's *The First of the Few*, a detailed account of the war of fighter pilots in the First World War does acknowledge the

³³C. S. Meyers., *Shell Shock in France 1914-1918* (London,1940) pp 12-14

³⁴R. H. Ahrenfeldt., *Psychiatry in the British Army in The Second World War* (London,1958) pp 4-14

mental strain involved and briefly notes some of the symptoms suffered.³⁵ Additionally, a recent publication by James Hamilton-Paterson, *Marked For Death*, addresses both the physical and mental stress involved and discusses not only the stresses upon both pilots and observers, but some of the outcomes and the medical response.³⁶ Although these accounts are often anecdotal they are usually based on some research and they are often confirmed by aircrew's personal accounts. Winter's source notes are particularly useful. *The Dangerous Sky*, is a substantial work covering aviation and medicine from the early days of flight and can be fairly described as a textbook of aviation medicine (although the author discounts such a title) Dr Robinson devotes considerable space to the First World War and the psychological problems of aircrew.³⁷ Two books which specifically address aircrew and the psychological outcomes of operational flying, albeit in World War Two are, *The Flyer* by Martin Francis and *Courage and Air Warfare*, by Mark Wells.³⁸ Francis's work is a scholarly and wide ranging study of the social, cultural and personal aspects of aircrew, in this case of the Royal Air Force. As a cultural history of military aircrew, it is in some respects an academic

³⁵D. Winter., *The First of The Few* (London, 1982) pp 175-190

³⁶J. Hamilton-Paterson., *Marked For Death: The First World War In The Air* (London,2015) pp 155-177

³⁷D. H. Robinson., (Dr) *The Dangerous Sky: A history of Aviation Medicine* (Oxford,1973) pp72-178

³⁸M. Francis., *The Flyer* (Oxford, 2008) M. K. Wells *Courage and Air Warfare* (London,1995)

book about ‘Aces’, although it recognizes that not all pilots are aces (and that not all flyers are pilots). There is however, an exceptional and unusual aspect of the book. That is the extended discussion of the reaction of society to the psychologically damaged pilots, something not found elsewhere.

Mark Wells does directly address the subject matter of this thesis: the psychological conflict between fear and duty and why aircrew continue to fight on despite heavy casualties. Wells compares operations of RAF Bomber Command and the United States Eighth Air Force in the bomber offensive in World War Two. He examines the causes of stress in aircrew in both forces, the interaction between social attitudes and effectiveness and he also addresses military psychiatry outlining how both command and the medical branch viewed the nature of courage. Wells sets out clearly the causes of stress on aircrew, which range from the accident rate (in both wars accidents were about 10% of casualties) in training and on operational squadrons, the mastering of new and complex aircraft, the effects of bad weather and the strain of operations being delayed and the consequent waiting, sometimes actually in the aircraft, and perhaps most stressful of all, watching friends and comrades die. He stresses the importance of leadership on morale. Virtually all the matters discussed and analyzed by Wells are as relevant to World War One as they were to the Second World War.

The historiography of war neurosis is now large, is topical and recognized as a legitimate academic study. There are several general accounts which examine the development of diagnoses and treatment of war neurosis from beginning of the twentieth century. Some of these accounts debate the question of whether psychiatric symptoms produced by battle stress are disorders defined by military and medical knowledge of the time or essentially the same and already known conditions, differently expressed. These matters are discussed in two major books: Ben Shephard's *A War of Nerves* (2002), a history of psychiatry in the twentieth century, starting with World War One and examining why some combatants fail to resolve the fear /duty dilemma. A second valuable study is *Shell Shock to PTSD* by Edgar Jones and Simon Wessley (2005) an analysis of the evolution of military psychiatry. The first three chapters describe the evolution of military psychiatry from the early 'wind contusions' of the Napoleonic wars, through the 'disordered heart' of the American Civil war to shell shock' of World War One. (the work in fact continues its analysis to the Gulf War). The development of specialized hospitals for sufferers of war neurosis and the continuing differences in treatment methods well after 1918 are other matters not covered elsewhere. The historiography of military psychiatry includes several works which set out an alternative view of the causes and treatment of war neurosis in World War One. These works argue that that Army medical officers did not effectively protect soldiers suffering from psychiatric or psychological disorders from unfair

disciplinary action. *For the Sake of Example* (1983) by Anthony Babington³⁹ dismisses the efforts of medical officers to respond effectively to the onset of large numbers of soldiers being removed from the front line with neurosis. The writers view is seen by a remark in the preface, 'the Army doctors seem to have set themselves up as extra branch of the provost corps'. His premise is that the 346 soldiers sentenced to death by courts martial between 1914-1920 were denied justice partly because of the failure of medical officers. A postscript by Major-General Frank Richardson (an army doctor), who said that RAMC doctors involved in these trials should have spoken up for the accused, as he did not accept that psychiatry was 'in its infancy' at that time. Another writer has taken a similar view of the army doctor's failure to intervene in courts martial on the grounds that many soldiers executed were in fact suffering from neurosis. *The Thin Yellow Line* by William Moore (1974).⁴⁰ On the other hand, in *Blindfold and Alone* (2001) by Cathryn Hughes and John Hughes-Wilson,⁴¹ the writers point out that at that time the average doctor, in or out of the service knew nothing of psychiatry and if a man appeared sane, he was fit for duty.

³⁹ A Babington, *For the Sake of Example* (London, 1983)

⁴⁰ W Moore, *The Thin Yellow Line* (London, 1974)

⁴¹ C Corns & J Hughes-Wilson, *Blindfold and Alone* (London, 2001)

Additionally, as Corns and Hughes-Wilson note, it was made clear to Army doctors that malingering was an ever-present problem. They also noted that the army was slow to accept that shell shock could occur unrelated to a physical wound. They (unlike Moore and Babington) did have access to the court martial records and they concluded, that it was impossible to assess how many of the accused suffered from a mental breakdown, but with hindsight it seems probable that most officers and men who served at the front suffered from what is now called post-traumatic stress disorder.

Methodology

Methodologically, this study combines three types of evidence War. First the unique medical records of 27,000 RFC Officers are exploited in conjunction with operational records and reports to establish the incidence of aircrew breakdown with psychological disability. Second, the evidence relating to the causes of psychological and psychiatric effects of combat flying contained in Official medical histories and reports, monographs and learned articles has been examined. Finally, use has been made of personal accounts, official psychiatric studies, Air Publications, Official Histories of the First World War in the Air, and many relevant articles. records and reports to establish the effects on operations of aircrew wastage due to psychological or psychiatric disorder.

To establish the numbers of removals from operations for psychological or psychiatric reasons the Casualty Card for the RFC/RAF, held in the RAF Museum have been accessed.

These cards were raised for all RFC/RAF Officer casualties in World War One, including killed in action, wounded in action, killed in flying accident, and missing/pow. For this study some 27,000 Officers' personal and incident casualty cards were accessed.⁴² Personal cards give details, usually including rank, squadron number, initial date of admission to reporting hospital, diagnosis, treatment and disposal to the RFC/RAF wing in the military hospital at Etaples, or more often to one of the RFC hospitals dealing with psychiatric cases in the UK. Incident cards give similar information regarding the patient, but with a short account of the accident or incident (eg crashed on takeoff). These cards are a unique record of the medical history of all RFC/RAF Officer aircrew in World War One. However, despite their authority and accuracy, there are some difficulties with these cards. The cards are completed by doctors or medical attendants who were usually very busy. They are in manuscript, which is sometimes impossible to read,

⁴² Although the vast majority of RFC/RAF aircrew in World War One were Officers, some 1400 NCO observers also served, together with an unknown number of airmen gunners. There were significant numbers of NCO pilots in Western Front Squadrons, a fair estimate is that in 1918 each squadron had two/three NCO pilots. It has not proved possible to examine the medical records of NCO and Airmen aircrew in this study, but it can be noted that in the years 1914-1918, some 169 NCO and Airmen aircrew were KIA, with a further 95 made POW and 44 killed in flying accidents at the front.

and cards are sometimes incomplete. A further difficulty is that the RFC did not reach a consensus about the diagnosis to be made for aircrew suffering from psychological or psychiatric disorder until December 1916, before then there are some unusual diagnosis/descriptions. Lastly care is needed in interpreting the cards as sometimes cards include several diagnoses referring to successive illnesses. Nevertheless, a study of these cards does establish with reasonable certainty the incidence of aircrew removed from operations with a psychological disorder. This study also examines from these evidential sources the impact of varying morale on the incidence of aircrew psychological breakdown.

Following this introduction, the first chapter, is concerned with one of the most important elements of this thesis, the development and maintenance of high morale in combat units. It has been shown that high morale has a significant effect on the number of cases of war neurosis. The War Office Report on Shell Shock noted especially the effect of high morale in reducing the rate of cases of shell shock in units. This chapter surveys the factors influencing the state of morale in individuals (aircrew) and units (squadrons)

Chapter two examines the recruitment procedures and intake of pilots and observers for the Royal Flying Corps from its formation and into the world war. This chapter establishes that the recruitment process did not involve any serious medical requirement and shows that no account was taken of any temperamental

or psychological requirements for successful aviators. By the third year of war, it had been recognized that air combat could cause psychological problems, but this knowledge had no effect upon recruitment arrangements.

Chapter three covers the training processes of the RFC noting the importance of efficient training in the building of high morale. The effect of heavy casualties on demand for replacements and the consequent fall in training standards is considered. The psychological effect of the many training accidents on aircrew is examined and the effect of the introduction of the Smith-Barry system on both training and morale is assessed. This study examines the reasons for the large wastage rates in training, which continued throughout the war, especially the effects of the high incidence of accidents.

Chapter four first surveys the history of war neuroses, noting the reluctance to consider a psychological reason for its occurrence. It then examines the physical and psychological reaction of First World War aircrew to the stress of flying and fighting in the air. This chapter also describes the psychiatric background to the disorders caused by combat stress and outlines methods of treatment used during the First World War.

Chapters five and six examine the development of air war over the Western Front from 1914-1918. Combat stress and its effects on the crews of the RFC /RAF are analysed. The increasing intensity of the air war is examined, together with the

effect of casualties and constant turnover of crews. Individual cases of breakdown are considered.

Chapter seven examines the operations of the Independent Force, during the last five months of the war stressing the heavy casualties suffered and the effect on morale and aircrew break down.

This thesis set out to establish the extent of aircrew breakdown for psychological disorders in the RFC/RAF, the causal influence of casualties on breakdown and the effect of high morale in prevention of breakdown. The conclusion records the completion of these objectives, setting out the incidence of cases of Psychological Disorder in pilots and observers of the RFC/RAF in World War One and the significance of these cases in the overall casualty figures. It establishes the relationship with the casualty rate, and the influence of training and morale upon aircrew failure.

Chapter One

Aircrew Morale

This study is concerned with the psychological breakdown of aircrew during the First World War. It has generally been accepted that good morale and discipline in a fighting unit not only enhances ‘fighting spirit’ but has a significant effect in reducing the number of cases of war neurosis.¹ Accordingly, this chapter will examine the nature of morale and the factors which enhance or degrade the state of morale in combat units, with particular reference to RFC/RAF squadrons.

Many successful commanders have appreciated the importance of morale, notably Field Marshal Montgomery, who consistently emphasised the need to maintain high morale in his lectures and speeches:

[The soldiers] training is the most important consideration in the fashioning of a fighting army. All modern science is directed towards his assistance but on his efforts depend the outcome of the battle. THE MORALE OF THE SOLDIER IS THE MOST IMPORTANT SINGLE FACTOR IN WAR. ²

Later as Chief of the Imperial General Staff, he said “without a high morale no success can be achieved in battle”.³ Many writers have also recognised the importance of morale, describing it as ‘of great operational significance’⁴ or

¹ *Report of the War Office of Enquiry Into ‘Shell-Shock’* (HMSO, 1922) pp.49-51; M. K. Wells, *Courage and Air Warfare* (London, 1995) pp.101-103; R. H. Ahrenfeldt, *Psychiatry In The British Army In The Second World War* (London, 1958) pp.272-273; R. R. Grinker & J. P. Spiegel, *Men Under Stress* (New York, 1963), chap 3.

² IWM, BLM/161 Montgomery’s ‘Morale in Battle’ April 1946. Emphasis in original, quoted in S Hart, Montgomery’s, ‘Casualty, Conservation and ‘Colossal Cracks’, 21st Army Group Operational Technique in NW Europe 1944-5’, *Journal of Strategic Studies* Vol 19 (4) (1996) pp.132-153.

³ Hart, p.135.

⁴ P. Mileham, ‘Morale Counts’ *RUSI Journal* Vol 145 (6) 2000, p.62.

‘high morale motivates the soldier to fight and shields the ordinary recruit from his fear.’⁵

On the other hand, the results of low morale in a unit can be disastrous. Number 10 (Naval) Squadron was transferred to the Western Front from Dunkirk in May 1916. The squadron immediately experienced the same attrition rates as the RFC and suffered heavy losses. These heavy (and unexpected) losses resulted in a shortage of pilots, causing the establishment to be reduced from twenty to 15 and pilots fresh from flying school to be sent to the squadron. There was an almost immediate crisis in the squadron with some pilots finding excuses to avoid flying and others breaking down. There was also a failure in leadership, one of the most important determinants of morale. The squadron was returned to Dunkirk.⁶

Morale is vital but intangible, and not only intangible but variable, often described vaguely as ‘high’ or ‘low’. Although morale applies both to individuals and groups, the characteristic problems of morale involve the individual’s relationship to the group: ‘esprit de corps’ is a group phenomenon:⁷

Unless the individual is reasonably content, he will not willingly contribute to the unit. He might desert or mutiny, but he is more likely simply to refuse to work wholeheartedly towards the goals of the group, High group morale, or cohesion, is the product of a high state of morale existing among the members of that unit.⁸

⁵ J. Fennell, ‘Courage and Cowardice in the North African Campaign; The Eighth Army and Defeat in the Summer of 1942’, *War in History* Vol 20 (1) 2013 p.99.

⁶ S. R. Wise, *Official History of the Canadian Air Force Vol 1 Canadian Airmen in the First World War* (University of Toronto, 1980) pp.173-174. These events are covered in chapter six of this thesis.

⁷ W. E. Hocking, ‘The Nature of Morale’ *The American Journal of Sociology* Vol 47 (3) (1941) pp.302-320 & p.311.

⁸ G.D.Sheffield, ‘*Officer- Man Relations, Morale and Discipline in the British Army 1902-1922*’ (Thesis, University of London 1994), p.64.

Although many of the factors reflecting the state of morale can be objectively assessed, such as desertion rates, disciplinary offences in a unit, or physical conditions of service, other factors such as leadership or loyalty to the cause, inevitably involves the evaluation of subjective evidence.

Notwithstanding these difficulties, almost all military historians and many commanders, have produced definitions of morale and an examination of some of these, particularly those relating to aircrew is useful before considering the factors which influence the state of morale in any military unit.

An early attempt at a military definition is that of a former RAF First World War pilot writing in 1926:

Morale, that instinct which inspires achievement as against self-preservation is the most important factor contributing to success in war, for it increases the efficiency of a force out of all proportion to its physical strength.⁹

This emphasises the individual factor, the state of mind which in military situations determines the willingness to fight. Another similar approach is that of a First World War commander, Brigadier-general Crozier, who said (in post-war memoirs):

The question of ability to ‘stick it’ and do the right thing in the heat of action, is largely one of morale.¹⁰

⁹ E.J. Kingston-McCloughry, ‘Morale and Leadership’ *RUSI Journal* Vol 74 (1929) p.305.

¹⁰ F.P. Crozier, *A Brass Hat in No Man’s Land*, (London, 1930).

He went on to point out that fear of the consequences of not ‘sticking to it’ was an important factor in maintaining that morale.

Another example from the First World War notes the importance of the individual aspect of morale:

self-respect is the second indicator of morale. Soldiers who have good morale reflect a pride in themselves in two ways which can be examined using qualitative evidence. First, soldiers who are good at their jobs and proud of themselves will naturally become clean and tidy. Secondly soldiers with good morale keep their environment as clean as possible.¹¹

A few years after the end of the First World War, Air Commodore Henry Brooke-Popham, the first Commandant of the newly formed RAF Staff College and a pilot in that war, gave a lecture to college students, during which he considered several definitions of morale. He first pointed to the Webster’s dictionary definition, ‘the mental state of a body of men’ as a true but not very helpful statement. Another suggestion, from a student, was ‘the attitude of mind which balances duty against discomfort and danger.’ The final suggestion, which although shorter is not dissimilar to later and perhaps more considered definitions, was ‘the spirit to endure’.¹²

Arguably, all these suggestions are accurate but simplistic. Brooke-Popham pointed out that before analysing the factors which make up morale, it was necessary to examine human nature, which he explained as ‘instinct’. He noted

¹¹ L. S. Lemisko, ‘Morale in the 16th (Irish) Division 1916-1919’ *The Irish Sword* Vol XX (1997), pp. 216-232 & p.218.

¹² ISMAY 32 00004, *The Serving Soldier*, Kings College London p.7, (accessed 24 Oct 2012). Brooke-Popham served in the RFC in the First World War as Commander of 3rd Wing and later as GSO 1 at RFC HQ.

that self-preservation of self, group or tribe, often motivated by fear was a counter to a high state of morale. He went on to describe the reasons for high morale in several historical settings, including Nelson's navy, where the inculcation of hatred of the enemy overcame fear. Of course, this was not generally the attitude of the servicemen in 1914-18 and is not often a factor in sustaining morale. Nor in the First World War was it the case that any army was induced to fight because the soldiers feared their own officers and NCOs more than the enemy, as Brooke-Popham suggested occurred in the Prussian Army. Strangely, Brooke-Popham, although an airman talking to RAF officers, did not specifically consider the position of aircrew or the war in the air.

One of the first writers to define and analyse the morale of aircrew specifically was Strafford-Clark, a psychiatrist attached to a Bomber Command squadron in World War Two. He flew on 15 operations in order to study at first hand the reactions of crews and spent four years with a bomber squadron observing aircrews on the ground before and after flights. A few years after World War Two, he analysed the effects of wartime operational flying upon the morale of Bomber Command.¹³ Morale was at first simply defined as, 'the basic attitude of the men to their job'¹⁴ and this was later expanded to encompass the mental state necessary for a man to continue his tour of operations, defined as,

¹³ D. Strafford-Clark, 'Morale and Flying Experience, Results of a Wartime Study' *British Journal of Psychiatry* Vol 95 (1949) pp.10-50.

¹⁴ Strafford-Clark, p.14

‘Confidence, assessed as a blend of resolution, bravery and fearlessness’¹⁵

Strafford-Clark noted that morale was heavily dependent on a number of internal and external factors affecting the individual. He stresses the importance of confidence in victory combined with belief in personal survival as a basis for high morale and the role of appropriate training in instilling the necessary confidence.¹⁶

Grinkler and Spiegel, writing in 1945 in a major study of aircrew stress in the United States Army Air Force in the Second World War, defined morale as:

the psychological forces within a combat group which impel its men to get into the fight. “Good morale” is ordinarily used to describe a state in which the men feel confident, satisfied, united and ready for combat activity. “Poor morale” implies that the men are dispirited, dissatisfied, disorganised and shy of combat.¹⁷

This definition noted the vital connection between morale and fighting spirit.

Morale, both in individuals and groups may be affected by many factors, including leadership, discipline, fear, loyalty, training, group coherence, regimental loyalty and the effectiveness of a unit: usually measured by success in combat.¹⁸ This last is especially important in relation to the casualty rate in a unit (squadron), as heavy casualties may be accepted if it is believed that that unit objectives are being achieved.

Apart from these specific and immediate factors there are also several general sources affecting morale which include, trust in national leaders, patriotism and

¹⁵ Strafford-Clark p.19.

¹⁶ Strafford-Clark p.23.

¹⁷ R.R Grinker & J.P. Spiegel, *Men Under Stress*, (New York, 1945) p.37.

¹⁸ P.Mileham, ‘Morale Counts’, p.62.

ideological commitment. These may be affected by the status of the individual, especially whether he is a volunteer professional or a conscript, as it seems clear that a volunteer will at least initially have good morale. This is of relevance to the RFC/RAF as all pilots and observers were volunteers.

In many cases these various factors can be evaluated to determine the state of morale in a military unit. Additionally, personal matters such as food and accommodation and individual welfare also matter.

As noted above morale is variable often taking time to establish at a high level, but also subject to rapid degradation following unexpected or stressful events. It can also be the case that different units of the same armed forces can be differently affected by similar conditions. In the later stages of the Russian campaign in the Second World War (1944) the fighting spirit of the German Army was maintained (as discussed below) under very difficult conditions. However, during the same period and in the same area, Luftwaffe aircrew and ground crew morale deteriorated when subjected to the same very cold weather and poor living conditions affecting the army and Luftwaffe fighting efficiency suffered severely.¹⁹

Considered below are the major factors which, it is submitted, influence morale in military fighting units. They are arranged in random order to reflect the fact that for units in different circumstances the most important factors may vary.

¹⁹ J. S. Haywood, *Stopped at Stalingrad The Luftwaffe and Hitler's Defeat in the East 1942-43* (UP Kansas, 1998) p. 37.

Group Effectiveness (Success in combat)

It is arguable that of all the factors affecting morale the most positive is success in combat. A notable example of the dynamic positive effect of operational success is shown by its effect upon Coastal Command aircrews in anti-shipping operations in 1945:

The spirit in the anti-shipping squadrons is so terrific that one is conscious of it the moment one walks into the mess.....I am always afraid of over-writing times such as these and I asked a Wing Commander who has done over a hundred operational flights along the French coast and the Bay of Biscay, if he felt the change. I said to him "do you imagine something terrific in their enthusiasm?" He said "no, you are right. It is like a man who has been catching fish for a long time and suddenly hauls them in, one after the other. He becomes anxious to catch as many as he can while they are still biting and naturally he keeps on until he can no longer see the cast" The expressions on the faces of the aircrews as they look at the photographs of their attacks are good to see. It is something like the fever that comes to a gambler when he knows he cannot go wrong.²⁰

It is worth noting that for most of their war the aircrews on anti-shipping operations had been suffering loss rates of up to 45% on operations, with an average rate of 23%. A torpedo bomber aircrew had a 17.5% per cent chance of surviving a first tour and 3% for a second.²¹ By 1945, German defences were weaker, the aircraft and weapons were much improved and both results and morale were at high levels. The other side of the coin is that lack of operational success hurts morale, as was the case in Bomber Command during its attacks on Berlin in 1944:

²⁰ H. Bolitho, *Task for Coastal Command* (London, 1945) p.110 quoted C J M Goulter, *A Forgotten Offensive* (London, 2005) pp.228-229.

²¹ Goulter, p.155.

In the Battle for Berlin, Bomber Command endangered its morale by pressing the attacks to the point at which the results achieved did not compensate for the losses sustained.²²

Group Coherence

It has been argued by several writers, that one of the most convincing indicators of good morale in a military unit is 'group coherence', a term which is especially relevant when considering morale in a squadron, almost the ideal example of a coherent fighting unit. The formation of feelings of obligation and loyalty to any group with which one is identified is of the highest significance to good morale.²³ This group loyalty is often exclusive of ethical, political or moral considerations. Group coherence has been suggested by several writers as a prime reason for the efficient performance of German army units in both the First and Second World Wars. In both conflicts, German troops continued to fight on even after it was clear that the war was lost.²⁴

Shils and Janowich argued that among the reasons for the effectiveness of small groups (section or squad) as positive morale builders is that the individual's need for esteem and affection from both comrades and officers is met within this small group.²⁵ They pointed out that as the army is often separated from civilian influences, the individual soldier comes to depend more on his military primary

²² C. Webster & N Frankland, *History Of The Second World War: The Strategic Air Offensive Against Germany 1939-1945* Vol III (London, 1961), p.310.

²³ Grinker & Spiegel p.40.

²⁴ S. A. Shils & Morris Janowich 'Cohesion and Disintegration in the Wehrmacht in World War II' *Public Opinion Quarterly* Vol 12 (1948) pp.289-315.

²⁵ Shils & Janowich p.281.

group. In the Second World War German soldiers often stressed the high level of comradeship, referring to their units as ‘one big family.’²⁶ Strachan has noted that this theory has been adopted almost without question by western armies as the rationale fits well with a volunteer army training for and (until The First World War) participating in ‘small wars’ and having strong regimental loyalties.²⁷

Writing about a later war, Nora Kinzer Stewart, a US Army sociologist noted the reasons why British forces had fought well in the Falkland campaign: first, the war was felt to be a just cause, second, the best troops were sent. Additionally, noting the high morale and cohesion of British Army units, she said:

Soldiers and NCOs were confident that their officers were versed in battle tactics. British NCOs were trained to accept responsibility at all levels of command. An open organizational climate with little regard for the privileges of rank and accompanied by good humour led to continual adaptation in the fluid and ever-changing battle and spelled swift success on the battlefield.²⁸

However, the strength of small group cohesiveness and morale can be undermined by several factors. It is argued that once groups disintegrated morale declined and fighting efficiency was lost.²⁹ One such weakening factor is the arrival of replacements following combat losses. Often these arrive directly from training units and sometimes do not have time to integrate before

²⁶ *ibid* p.28.

²⁷ H. Strachan, ‘Training, Morale and Modern War’ *Journal of Contemporary History* Vol 41 (2) (2006) p.211.

²⁸ N. Kinzer Stewart, *Mates and Muchachos; Unit Cohesion in the Falklands/Malvinas War* (New York, 1991) pp.133-134 quoted in Sir Lawrence Freedman, *The Official History Of The Falklands War Vol II War and Diplomacy*, p.730.

²⁹ O. Bartov, ‘Soldiers, Nazis and war in the Third Reich’ *Journal of Modern History* Vol 63 (1991) p.49.

further casualties exacerbate the problem. This was certainly the case in the Royal Flying Corps at some periods in the First World War when losses were particularly heavy and on some squadrons morale was affected.³⁰ During these periods of heavy losses during the battles of the Somme and Arras and on the bombing squadrons of the Independent Force, it was common for replacement pilots to spend only a few days on the squadron before becoming a casualty.³¹ Although replacements and losses within the unit can adversely affect morale, it is also true that the Wehrmacht especially in Russia and North West Europe, though much weakened and with many only partly trained replacements, continued to fight tenaciously to the end. This has led to other factors, including ideological commitment, being suggested as reasons for the continued combat motivation of the Wehrmacht, the U-boat force and the Luftwaffe despite the great superiority of the Allies and the realisation that the war was lost. During the last year of the war the Germans continued to fight fiercely even though the 'primary group' factor had collapsed due to personal losses, shortage of food and supplies and lack of medical facilities. Bartov has shown how an elite Motorised Division in fourteen months of combat lost 98.4% of its 18,000 men and 194% of its officers. One company in 15 weeks of fighting had eleven changes of command.³² Clearly with this level of loss and turnover it is unlikely that a

³⁰ R. Barker, *The Royal Flying Corps in World War One*, (London, 1995) pp.188-189; L A Pattinson, *History of 99 Squadron*, (Cambridge, 1920), p.30.

³¹ D. Winter, *The First of the Few* (London, 1982), pp. 153-157; L. A. Pattinson, *History of 99 Squadron* (London, 1920), pp. 30-31.

³² O. Bartov, 'Daily Life and Motivation in War, The Wehrmacht in the Soviet Union', *Journal of Strategic Studies* Vol 12 (2) (1989) pp.201-202.

cohesive group loyalty could develop and some other motivation explains the fact that at very late stage (only a few weeks before the end), morale remained high enough for units to be able to fight efficiently. Bartov suggested several possible factors, pointing out that some matters, including ideology, patriotism, or national pride must be instilled before the soldier arrives at the battlefield.³³

Undoubtedly the factors noted above applied to the German forces, but on the battlefield other motivational forces may apply, including fear, which in the German armed forces was certainly a factor.

Fear

On the Russian front and later in France and Germany, German commanders considered that morale and motivation needed to be bolstered by a fear of the consequences of failing to carry out any military duty. For example, Generalleutnant Erwin Menny, commanding 72 Infantry Division (speaking when a prisoner of war), described his actions after receiving an order forbidding surrender:

I issued an order like that in Russia and it succeeded in restoring the position. I had just taken over a new 'Division' there which had newly come from Norway, so that it was yet fresh and was still good. The enemy broke through simply because a few fellows had run away. Immediately I insisted in fetching the deputy judge advocate general from O staff at the rear and brought him to the front- his knees were knocking together with fright- and we tried the men directly behind the place where the enemy had broken in and sentenced them immediately and shot them on the spot. That went round like wildfire and the result was that the main defensive line was in our hands again at the end of three days. From that moment on there was quite good order in the 'Division'. It acted as a deterrent, at any rate no one else ran away *unnecessarily*.

³³ Bartov, p.204.

Of course, a thing like that is contagious, it is demoralizing when everyone runs away.³⁴

Also in the Russian campaign, the German high command's concern about the fighting spirit of senior officers led to the formation of a Flying Court Martial under the command of a general (Hubner), who had the power to court martial and shoot on the spot any officer not showing the 'correct' attitude. The first victims were four officers who were held responsible for the loss of the Bridge at Remagen in April 1945.³⁵

During the Second World War, some 21,000 executions were carried by Germany for military offences and many thousands more were sentenced to imprisonment.³⁶ It is true that continuing to fight because of the consequences of refusing may be effective but does not lead to high morale. These exceptionally punishment figures can be compared with those for the German Army in the First World War when there were only forty-eight executions for military offences.³⁷ The German figures for the First World War are also in sharp contrast with the British experience in that war. In the years 1914-1918 British Courts-Martial sentenced 3080 men to death. Of those 18 were executed for cowardice and 266 for desertion and some 30 for other offences (including Murder, which still

³⁴ CSDIC Transcripts TNA WO 208/4363. S Neitzel, *Tapping Hitler's Generals; Transcripts of Secret Conversations 1942-45* (Pen & Sword: Yorks, 2007) pp.189-190.

³⁵ Neitzel, p.352 CSDIC Transcript 28th April 1945 pp.150-151.

³⁶ R. J. Evans, *The Third Reich at War 1939-1945* (London, 2008) pp.501-503. These numbers include Naval and Luftwaffe executions, particularly after the defeat at Stalingrad. From June to December 1944, 139 men of the Kriegsmarine were executed for military offences. See T. P. Mulligan, *Neither Sharks Nor Wolves* (London, 1999) pp.192-193.

³⁷ Evans, p. 502.

involved the death penalty in this period) the remaining sentences were commuted to terms of imprisonment, which was often suspended so that the soldier concerned could be kept at the front.³⁸

The ordeal of trench warfare and the large numbers of casualties brought about by the continued artillery bombardments undoubtedly influenced morale. It is therefore not surprising that the Commanders in the field felt it necessary to use the extreme sanction to ensure the fighting spirit of the troops was maintained.

Members of courts-martial were aware of the effect their verdict could have:

A memory that disturbs me is the hint or warning that came down from above...that morale needed a sharp jolt, or that a few severe sentences might have a good effect. It was expedient that some man who had deserted his post under fire was shot to encourage the others. Sometimes discipline would be screwed a few turns: death sentences would be confirmed and executed.³⁹

Although the number of executions on the western front, (about one in ten of those sentenced) shows an awareness of the need for a deterrent, commanding generals and Haig as GOC invariably considered all possible mitigation before confirming or recommending death sentences. A study of the cases shows that confirming officers were aware of the needs of both morale and discipline, as there were undoubtedly some bad cases of breakdown. In August 1916, the commanding officer of the 16th Cheshires wrote to his brigade commander:

Dear General,

³⁸ D. French, 'Discipline and the Death Penalty in the British Army in the War against Germany in the Second World War', *Journal of Contemporary History* Vol 33 (4) (1998) p.352. Different figures are given in C Corns & J Hughes-Wilson, *Blindfold and Alone* (London, 1998) p.407, (246 executions including other offences); W Moore, *The Thin Yellow Line* (247) and A Babington, *For The Sake of Example* (London, 1983) p.288 (304, including those executed for murder).

³⁹ C Carrington, *Soldiers from the War Returning* (London, 1965), p.172

I am ashamed to say that the Battalion is quite demoralised. I do not think they would stand up against anything and I do think that it would be safer to get them relived if possible. Company commanders tell me that very few men would follow their officers over. They are quite hopeless.⁴⁰

This is an extraordinary letter, but it does explain the viewpoint of some commanders, that strong disciplinary measures would maintain fighting spirit if not morale. In the First World War as we have seen there were 266 executions for desertion, thus confirming the recognition by senior commanders that the number of desertions is an indicator of morale and of the willingness to fight by the new armies. The overall desertion rate in the First World War was 10.26 per 1,000 men. It was apparent by 1915 that desertion was a growing problem and in June 1915, the War Office issued a notice, pointing out there had been 1251 desertions from the Expeditionary Force and over 20,000 from the new army and regular units and continuing:

Desertion during active service is one of the most serious crimes a soldier can commit, a fact that does not appear to be everywhere sufficiently appreciated by the officers who as presidents and members of courts martial have to deal with this, as sentences in not a few cases have been exceedingly lenient.⁴¹

This edict seems to have had some effect upon the decisions of courts-martial as most of the executions for desertion were imposed between the second half of 1916 and 1918. However, it is submitted that the use of the ultimate sanction of the death penalty as motivation for the maintenance of fighting spirit was not effective in the First World War, particularly as a deterrent to desertion. Of

⁴⁰ TNA WO 95/2485 *War Diary 105 Brigade*

⁴¹ Corns & Hughes-Wilson, *Blindfold and Alone*, p.216.

those men who were executed for desertion, many had offended more than once, some several times.⁴²

In the First World War, most accounts of the state of the British Army's morale refer only to soldiers and NCOs. Two only of the 346 death sentences imposed were upon officers and one of those was for murder. However, there was concern about the morale of officers and at least one officer was court-martialled and dismissed for refusing duty.⁴³ In fact as will be discussed later in this work, officers who were removed from the front, including RFC aircrew, were treated differently from soldiers and NCOs, almost certainly from concern about the effect upon morale of the inevitable publicity following courts-martial.⁴⁴

The death penalty for military offences (except for treachery and mutiny) was abolished in 1930.

In the Second World War, there were several periods when the morale of British Armies was a matter of concern, especially in North Africa and Italy, where desertion rates were considered unacceptable. Representations were made by several senior generals for the death penalty for military offences to be reintroduced. It was pointed out that deserters often preferred detention or imprisonment to action in the front line, knowing there would almost certainly be an amnesty after the war. The matter was raised by the C-in-C Middle East, Sir Claude Auchinleck, in April 1942, who said that there had been 291 convictions

⁴² Corn & Hughes-Weston, p.223.

⁴³ W. Philpott, *Bloody Victory* (London, 2009) pp.480-481. (The case of Lt Max Plowman).

⁴⁴ Corns & Hughes-Wilson, p.500.

for desertion and 19 for cowardice in the command and believed that the death penalty would be a 'salutary deterrent'⁴⁵

He repeated his request in July 1942, soon after Tobruk fell to the Germans, asking:

in the strongest possible terms for earliest agreement to reintroduce death penalty for specified offences. Recent desertions show alarming increase even amongst troops of highest category. Present punishments that can be awarded insufficient deterrent. Would stress that cases where deserter takes truck containing food water and means of transport of his comrades are far more serious than similar cases during last war.⁴⁶

The matter was raised again in Italy in 1944-45, when the C in C in Italy, Sir Harold Alexander, raised the matter of reintroducing the death penalty. Due to the high casualty rate in the Italian campaign and the difficulty of obtaining replacements, the high desertion rate was a significant problem. Between January 1944 and May 1945 some 11,458 soldiers deserted.⁴⁷ The command accepted that morale was badly affected by the difficult conditions of the front line. All troops, but especially the infantry suffered from the constant rain, chilling winds and very heavy mud which made all movements difficult and despite the rain there was shortage of fresh drinkable water.⁴⁸

It is arguable that if desertion was to be treated as an indication of the morale of the British Army in the Second World War, there was no need for an extreme sanction, as the rate of desertion overall in the Second World War was better than

⁴⁵ French, 'Discipline and the Death Penalty', p. 539.

⁴⁶ French, pp. 539-540.

⁴⁷ W. Jackson, *History of The Second World War: The Mediterranean and Middle East Vol VI Part II* p.374.

⁴⁸ Jackson, pp.366-367.

in the First World War at 6.89 per 1000.⁴⁹ However, the reason for refusing the generals request for the restoration of the death penalty for military offences was pragmatic and political, as the Army Council pointed out to Churchill:

Directly we introduce legislation we are in the following dilemma. If legislation is necessary, the facts and figures must be very serious. But if they are serious, we can't afford to tell either to our friends or to our enemies.⁵⁰

The concern of senior officers about desertion rates and courts-martial shows the importance of disciplinary factors as a measure of the state of morale, even though as noted above firm discipline does not of itself mean good morale, although some service authorities may believe that is the case. So much so that when presenting the naval estimates in parliament in 1928, the First Lord noted that the "morale of the fleet had never been higher" evidenced by the fact that the annual number of courts-martial had reached its lowest figure ever.⁵¹

Ideology

Obviously, punishment, however effective as a disciplinary measure, is a negative factor in promoting high morale and fighting spirit. A more positive factor is most certainly 'ideology' which almost certainly applied in the case of the Wehrmacht in the last years of the Second World War. The performance of the German forces in 1944-45 was undoubtedly influenced by a large measure of ideological support for the Nazi regime in general and for Hitler.

⁴⁹ Corns & Hughes-Wilson, p.431.

⁵⁰ French, p 542

⁵¹ L. Gardiner, *The Royal Oak Courts-Martial* (London, 1965) p.25.

Shils and Janowitz did not assume that the 'primary group' theory alone was motivation for the fighting spirit of the Germans, even though they felt it was the major factor. They also noted the crucial role of faith in Hitler of the German troops, despite the continual reverses suffered in France and Germany after D-day and the retreat in Russia. Opinion polls of German Prisoners of war showed continued faith in Hitler and even some belief in final victory.⁵² This was in large part that from 1938, the training that all German soldiers received included a large amount of National Socialist indoctrination and most male youths had been subjected to the influence of the 'Hitler Youth' organisations. Officers were required to learn and believe in the 'National Socialist' world view.⁵³ British First World War aircrew were not subjected to this sort of indoctrination.

Leadership

Although there are many factors which affect the state of morale, it is very unlikely that 'high' morale can be achieved without confidence in the leadership; conversely 'low' morale is often the result of bad or inept leaders. Leadership itself has many definitions but a few examples will show that a few basic attributes are always mentioned:

Among other things the military leader has to know his men, take an interest in their careers, earn their respect and their loyalty, eschew cursing them, promote their comfort and welfare, be patient, considerate, firm and vigorous, keep the men informed, show

⁵² Shils & Janowitz, p.304.

⁵³ Evans, p.498.

enthusiasm, explain the reason behind orders, preserve good health ... and bid the furloughed soldier a cheery farewell.⁵⁴

That is a very comprehensive account of a leader's responsibility, another shorter but compatible definition is:

the leader must have professional skill and the ability to put it across ... he has to be an enthusiast ... and there must be loyalty-up and down. Obviously the leader has to have judgement.⁵⁵

Kingston-McCloughry, (who flew fighters in the First World War and was later a senior RAF commander) already noted above for a definition of morale, also defines leadership, pointing out that leadership is the quality which influences and inspires officers and men. He set out the qualities required as:

the first quality required of a leader is reason; a reason prompted by high ideals and directed by knowledge, efficiency, energy, judgement and self-confidence. The second quality is imagination.....he must feel the pulse of his own force and be able to place himself in the midst of the conditions being experienced by his men.....Lastly a leader requires a strong and determined will, with energy to carry through a resolution.⁵⁶

A very clear example of the correlation between leadership and morale is that of Admiral Donitz and the U-Boat command in the Second World War. The measures which established the high morale of U-Boat crews had been instilled by Donitz in the first years of the war.

An essential part of this spirit which he sought to instil from the first was the feeling of belonging to a special or elite corps within the larger brotherhood of the service; one rather theoretical manifestation of this was his insistence that no U-Boat man shaved while at sea even on the short passages made by the small boats of the 1st Flotilla.⁵⁷

⁵⁴ *Morale in the AAF in World War II, US Air Force Historical Study No 78 (USAF Historical Division, 1953) pp.3-26.*

⁵⁵ C. N. Barker, Lt Col, 'A Regimental Officer's Analysis of Morale.' *RUSI Journal* Vol 107 (1962) p.327.

⁵⁶ Kingston-McCloughry, p.307.

⁵⁷ P. Padfield, *Donitz The Last Fuhrer* (London, 1984) p.155.

His success in creating high morale was noted in a report on the U-Boat service which noted the: 'Military and comradely spirit in the flotilla is above all praise'. The U-Boat crews had confidence in his knowledge of submarine warfare and his personal interest in their performance, manifested by his practice of meeting every crew on their return from patrol and when appropriate decorating captains and crew members at the dockside. It was noticeable that when U-Boat command (BdU) was forced to move from the French bases, first to Paris and later when Donitz was appointed C-in-C German Navy in 1943, to Berlin and this practice was not possible, morale was affected. The last move to Berlin which coincided with the disastrous losses of early 1943, certainly contributed to a significant lowering of morale in the U-boat force.

One matter which Donitz felt important in maintaining morale was the award of decorations and he was insistent that any awards to U-Boat crew were made as quickly as possible, he said;

I also made it a practice of presenting at once, in the name of the Commander-in – Chief, any decorations which the captains of the boats had recommended and of which, bearing in mind the need for equal treatment for all U-Boat crews, I had approved. Where decorations were concerned, there was no correspondence and no red tape in U-Boat command ... I regard this practice of immediate awards to those engaged upon operations as psychologically important.⁵⁸

This attitude to publicising awards, which was also the policy of the German Air Force in the First World War, was in sharp contrast with the British policy of 'no

⁵⁸ Donitz, *Twenty Years and Twenty Days* (Naval Institute Press, 1990), pp.118-119.

publicity.’ The result was that German Aces were well known (and sometimes feared) by RFC aircrew and the public, whereas the successful British pilots were virtually unknown, certainly in the first two years of the war.⁵⁹

Apart from Donitz’s leadership at the top of U-boat command, the leadership qualities of the individual captains were vital to the maintenance of morale. The early U-boat ‘Aces’ were of the highest quality both as seamen and commanders, but their replacements in 1942/3 were clearly of a lower standard and morale suffered accordingly. The lowering of morale caused by the high casualty rate (41 U-boats lost in May 1943) was evidenced by, failures to press home attacks, avoiding convoy routes, crews showing lack of confidence in captains and crew failures.⁶⁰

The U-Boat experience, with its fluctuation of morale over time, can be compared with that of the RFC in 1914-18. Aircrew of the Royal Flying Corps undoubtedly considered themselves an elite and certainly at the start of air operations in 1914 and early 1915 were full of keenness and confidence. By mid-1916 both confidence and morale at least in some units had suffered and the heavy casualties suffered supporting the Army in the Somme battles had a serious effect on morale. It seems that Trenchard’s many visits to the Squadrons, although

⁵⁹ M. Molkenstin, *Centenary History of Australia and The Great War Vol 1 The War in the Air*, pp.158-159; J. Hamilton-Paterson, *Marked For Death* (London, 2015), pp. 187-188. (see chapter six below.)

⁶⁰ D. Syrett, *The Battle of the Atlantic and Signals Intelligence*. (Naval Records Society, 1998) p.167. Paper 101 U-Boat situation w/e 19/4/43

inspiring some aircrew, did not have the same overall effect as Donitz's to his crews.⁶¹

The influence of the factors noted above on the morale of aircrew specifically has been considered by several writers. Apart from Strafford-Clark, who was concerned with RAF Bomber Command, Mark Wells has covered the general aircrew experience in World War II and a major report by the United States Army Air Force was produced at the end of the Second World War. As already noted, Grinker & Spiegel produced a comprehensive account of the effects of combat flying on US aircrew.

All these writers concluded that, as with U-Boat crews, probably the most important and most direct influence on the morale of aircrew is the quality of leadership. Aircrew are usually specially selected and at least during training are well motivated and morale is inherently high. This factor is emphasised in the report on the morale of the United States Army Air Force in World War Two. Having noted how leaders should act it, goes on to set out the leadership qualities needed:

certain fundamental traits are essential.....these include vigour, interest in the welfare of all personnel, and perhaps most important of all, the ability to inspire confidence by demonstrating both a grasp of the work at hand and a capacity for doing it'⁶²

⁶¹ C. Lewis, *Sagittarius Rising* (London, (London, 1936, 1994) p.101 .

⁶² *Morale in the AAF in World War II* p. 66.

Although other qualities are needed to lead aircrew, a failure of competence or courage has a particularly bad effect. The courage required of aircrew commanders includes the moral strength to send pilots or crews on operations which will inevitably incur heavy losses. In the First World War, Squadron Commanders were initially barred from operational flying and although some ignored the order, memoirs of the air war often comment that the flight commanders who led the squadrons in the air were the real leaders.

In the Second World War there was discussion in both British and American Air Forces as to whether squadron commanders should fly on operations or should remain as administrative commanders. It was clear that from the perspective of the crews themselves, morale was enhanced if all commanders led from the front by flying operations. As General Curtis Le May put it:

How can any commanding officer send his people into combat when he knows nothing about it? So, I started out leading all missions personally. Not only did I feel that in order to lead the people fighting under me, but I had to find out things... you have to get in there and fight to find out what it's about.⁶³

Not all senior commanders were able to do what Le May did, but all had to maintain the morale of their crews. In Bomber Command, many group commanders would have liked to fly on operations, for similar reasons to Le Mays, but the C in C Bomber Command (Harris) specifically forbade group commanders from flying operations⁶⁴ Nevertheless, Harris was always

⁶³ General Curtis Le May, Commander Eighth Air Force, quoted by M Wells, *Courage and Air Warfare* (London, 1995) p. 139.

⁶⁴ H Probert, *Bomber Harris, His Life and Times* (London, 2003), p. 266.

concerned about the morale of bomber crews and did not restrict Station Commanders or other senior officers from flying on operations as he felt this was helpful to the morale of those who had no choice about flying. In contrast with the RFC command's initial view in the First World War, he felt strongly that Squadron Commanders should take part in operations.

Harris was also concerned about the effect on morale of individual crew leadership, that is by aircraft captains. He was aware of the dissatisfaction in Bomber Command of some Squadron commanders who disliked NCO captains and felt that all captains should be at least Flight Lieutenants, a view supported by many group commanders.⁶⁵ Harris pressed for officer rank for all captains of heavy bombers but was unable to convince the Air Ministry and Treasury.

Unlike Donitz and Trenchard, Harris was not often seen by his crews, but could maintain their respect and trust, largely because the crews felt that he had their interests at heart. Those visits he did make were undoubtedly helpful to morale: as is shown by a visit in September 1943 to a squadron whose operational record was poor and morale very low. He reminded crews of their duty in forceful terms and answered many questions. The next day at another squadron he was met with cheers from the assembled aircrew.⁶⁶

Harris like Donitz was aware of the importance for morale of successful crews and individuals receiving appropriate decorations.⁶⁷ However, although the

⁶⁵ Probert, pp. 210-211.

⁶⁶ Probert, p. 200.

⁶⁷ Probert, p.212.

impact of good leadership by senior commanders was important, it was the quality of commanders of the front-line squadrons in the RAF and the USAAF had the most immediate effect on morale. This importance is reflected in a remark by an RAF unit medical Officer:

Send a good leader to a squadron of low morale and in a short space of time he will build it up; put a bad leader into a squadron with high morale and, given time the standard will deteriorate.⁶⁸

The USAAF report noted the importance of leadership, putting its importance as the strongest factor affecting morale, and pointing out;

There was widespread agreement that unit morale acted as “a complete barometer and gauge of the fighting spirit, capacity for leadership, and general all-round ability of the commander.”⁶⁹

Several post-World War Two studies of aircrew emphasised the importance of leadership in promoting good morale. In a major report published in 1947, two RAF psychiatrists, who examined 22 RAF station and squadron commanders and 25 squadron medical officers in Bomber Command, found that good leadership was thought to be vital, indeed many felt that it was the most important of all. In fact, 37 of the 45 said that ‘the squadron commander is the most important man in the RAF’. They also noted that it was important for morale that the squadron commander flew on operations.⁷⁰

Training and Weapons (Aircraft)

⁶⁸ Wells p.137.

⁶⁹ *Morale of the AAF in World War II* p.66.

⁷⁰ C P Symonds (Sir Air Vice-Marshal) & D J Williams (Wing Commander) *AP3139 'Personal Investigation of Psychological Disorders in Flying Personnel of Bomber Command'* (HMSO,1947), Chapter IV, pp.31-64 / p.53.

The lack of 'air fighting' training or in some cases no operational training at all was a constant factor in the RFC experience of war and undoubtedly affected squadron morale. It cannot have helped morale that many squadrons found that some replacement pilots had to be sent home for further training, thus increasing the burden on other pilots.

Training especially combat training is a vital component of morale. Strachan has noted five fundamental functions of training which lead to proficiency with weapons and creates self-confidence. They are, firstly, to counter boredom, secondly to distinguish the soldier from the civilian, thirdly, it can create unit cohesion, fourthly, soldiers can assimilate tactical thinking and fifthly it enables trainees to master innovative technologies.

He also pointed out that a large part of training is psychological, aiming to build self-confidence.⁷¹ For aircrew, it is particularly important that confidence in the type of aircraft flown must be established. Sometimes this task is more difficult because an aircraft may have a reputation for difficulty or unreliability. Fear of a particular aeroplane had first appeared in the RFC in the First World War when the DH2, earned notoriety and the name 'Flying Coffin' or 'spinning incinerator' because of engine troubles and a tendency to spin, both factors

⁷¹ H. Strachan, 'Training, Morale and Modern War' *Journal of Contemporary History* Volume 41 (2) 2006 pp.215-216.

causing crashes and fires. Even after it had been shown that recovery from a DH2 spin was possible, this aircraft continued to cause anxiety in the RFC.⁷²

Another First World War aircraft which had a bad reputation was the Morane. Cecil Lewis called it ‘one of the recognised death traps’ which pilots in training hoped never to fly.⁷³ Morale on Morane squadrons was very low mainly due to the high accident rate.

In the Second World War several USAAF aircraft encountered difficulty in getting the confidence of their crews. The Fighter P-38 suffered a series of unexplained accidents in 1942, which resulted in large scale requests by pilots for transfer to other units. Even worse was the story of the medium-bomber the B-26. From its first delivery to service, this aircraft proved difficult to maintain and worse, dangerous to fly, causing many accidents. As the AAF report noted the effect on morale was profound:

As disaster piled on top of disaster, a mood of panic spread like a pestilence from one B-26 base to the next and helped to add to the accident rate. The situation became so serious that when an opportunity for transfer arose, every eligible pilot in the 30th Bombardment Group, with the exception of the commanding officer and his executive, either formally or informally stated a desire to escape from B-26 training to a safer kind of flying activity.⁷⁴

It took some design changes and several demonstration flights before morale was restored and aircrew convinced that the B-26 was safe to fly. The USAAF 2nd

⁷² R. Barker, *The Royal Flying Corps in World War I* (London, 1995) pp.142-143; J H Morrow, *The Great War in the Air* (Airlife, Shrewsbury, 1993), p.168.

⁷³ Lewis, *Sagittarius Rising*, p.47.

⁷⁴ *Morale in the AAF in World War II*, p.21.

Air Force flying the four engined B-24 also had problems following several unexplained accidents which had a chilling effect on aircrew morale.

Apart from the problems with a particular aircraft, the accident rate in training was also a cause of concern to command and aircrews alike. Bomber Command suffered the loss of over 8,000 aircrew in training accidents, with another 4000 injured.⁷⁵

Throughout the First World War in both the RFC and later the RAF the number of accidents was a major cause for concern, both for aircrew under training and on operational squadrons.⁷⁶

Morale in the RFC, despite concerns about some aircraft, was undoubtedly enhanced by the introduction of the Smith-Barry system and together with the Avro 504 (introduced as the standard basic training aircraft) which was:

a nice tempered, reasonable machine that obeys a simple honest code of rules at all times and in all weather. And by shedding a flood of light on the mysteries of its control he drove away the fear and the real danger that existed for those who were flying aeroplanes in the blackest ignorance of first principles.⁷⁷

The system and the aircraft gave pilots the confidence which came of conscious mastery of their aircraft, and although the only real training for war is war, pilots were able to approach operations able to concentrate on fighting and not be concerned about controlling the machine, with a very positive effect on morale.

⁷⁵ Wells, *Courage and Air Warfare*, p.31.

⁷⁶ See Chapters six and seven.

⁷⁷ Jones, *TWITA* Vol V, pp.430-431; C G Jefford, 'The Training of Pilots in the Royal Flying Corps/Royal Force 1912-1918' *Journal Royal Air Force Historical Society* Volume 70 (2018) pp.15-40 & p. 31; R Hawkins, 'Teaching the world to fly R Smith-Barry', *The Irish Sword* Volume XX No 80 (1996) pp. 176-183. An account of his character and influence.

Casualty Rate

Another major source of changes in the morale of aircrew in both World Wars was the operational casualty rate. In the Second World War, between 1939 and May 1945, Bomber Command lost (in addition to the training losses noted above) 47,258 aircrew flying on operations.⁷⁸ The first of these heavy casualties came in very early raids by Bomber Command, on 8th and 18th of December 1939. On both days Wellington Bombers made daylight attacks on the German Naval Base at Wilhelmshaven, on the eighth five out of six aircraft were lost and on the eighteenth 12 out of 22 aircraft were lost.⁷⁹ Among the direct results of these high loss rates (change to night bombing, change of target policy) was a loss of confidence by many aircrew. Another immediate result was start of urgent enquiry at the Air Ministry about the much operational service should aircrew serve before resting or removal from operations, The only previous experience the RAF had was from the First World War, when the usual but not official period of front line service was six months.⁸⁰

All RAF commands were consulted and the first set of limits for operational flying were introduced, it being generally accepted that a 'datum line' would be introduced giving the individual a 50-50 chance of completing his tour. For

⁷⁸ Sir C Webster & Frankland, *The Strategic Air Offensive Against Germany 1939-1945* Vol IV (HMSO, 1961) Appendix 41, p. 440.

⁷⁹ Ibid Vol 1 pp. 192-195.

⁸⁰ J Terraine, *The Right of The Line* (London, 1985), pp. 522-523.

Fighter Command the tour length was to be 200 hours operational flying, Coastal Command were unable to decide at that time, and for Bomber Command, the immediate cause for concern, 30 missions not exceeding 200 hours.⁸¹ By 1941 with the increased intensity of operations and introduction of many inexperienced crews, there had been an increase in cases of 'Flying Stress' the RAF Medical Service carried out a survey of cases in Bomber Command to determine the factors influencing flying stress.⁸² Following the survey it was appreciated that apart from alleviating (where possible) the factors causing flying stress, cases could be addressed in two ways, Firstly, individuals could be removed from operational when they began to show signs of stress, or secondly, tour lengths limited to an amount of operational flying which would be within the capabilities of the average member of aircrew. As it was almost impossible to anticipate psychoneurotic breakdown in any individual by signs of nervous fatigue, the practical option was limitation of tour length.⁸³ In 1942 an investigation into psychological disorders in flying personnel in Bomber Command *inter alia* considered the question of tour lengths. Station and squadron commanders and station and squadron medical officers were consulted, and all except three were in favour of limit of operational exposure. The reasons in favour included: squadron commanders needed a yardstick with a standard reference point from

⁸¹ Terraine, *Right of the Line*, p. 23.

⁸² S C Rexford-Smith, *Official History of The Second World War The Royal Air Force Medical Services Volume II Commands* (HMSO) pp. 123-124.

⁸³ *Ibid*, pp.130-131

which he can measure the performance of individual squadron members, the limits help the crews themselves, they can have something at which to aim and if the limit is within the reach of the average member of the crew he could be removed before deterioration begins and possibly remain efficient for a second tour.⁸⁴ Following this investigation, the number of operations which would constitute a tour was set at a figure which would give the notional 50% chance of survival.⁸⁵ In Bomber Command this was set at 30 completed operations, and for a second tour, recognising the statistically increased risk, 20 operations. Other Commands used the number of operational hours flown to complete a tour; in Fighter Command, it was day fighters 200 hours and night fighters 100 hours; Coastal Command set 800 hours for anti-submarine operations and 200 hours for Torpedo squadrons and other squadrons employed offensively (anti-shipping operations).⁸⁶ With regard to Bomber command, the C-in-C Sir Arthur Harris was not entirely in favour of a set tour length, being unwilling to encourage the idea that crews were involved in some form of 'trade union' contract. Nevertheless, he accepted the necessity of such an arrangement.⁸⁷

In the event, in 1941, a bomber crew had a 44% chance of surviving a first tour of 30 operations and a 19.5% chance of surviving a second: by 1943, the casualty

⁸⁴ Sir Charles Symonds (AVM) & DE J Williams, 'Personal Investigation of Psychological Disorders in Bomber Command', *AP3139 Psychological Disorders in Flying Personnel of the RAF 1939-1945* (HMSO, 1947), chapter IV part III pp. 38-41.

⁸⁵ D D Read, 'The Historical Background to Wartime Research in Psychology in the RAF' E J Dearnly & P B Warr (eds.), *Aircrew Stress in Wartime Operations* (London, 1948) pp. 5-6.

⁸⁶ J Terraine *The Right of the Line* (London, 1985) pp. 526-527

⁸⁷ H Probat, *Bomber Harris* (London, 2003) pp 208-211 Wells p126

rate had increased so that these figures had fallen to 33% and 16%.⁸⁸ Flying with Coastal Strike forces (losing over 4000 men), with an even greater loss rate, which meant a 17.5% chance of surviving a first tour and a 3% chance of a second.⁸⁹ The USAAF Eighth Air Force lost some 26,000 killed with survival rate of slightly less than 25%.⁹⁰

At the start of the First World War in August 1914 the RFC's strength was 146 Officers and the RNAS 130 Officers.⁹¹ Almost all the officers were pilots. At the end of the war the total officer strength was 27333 officers, with another 16681 cadets and NCOs under instruction.⁹² Total casualties to November 1918 were: 6166 aircrew killed and some 3212 missing PoW or interned, another 7245 were wounded.⁹³ Of course the RFC losses are minute compared to the killing rates in trench warfare but were nevertheless a very high proportion of the total force engaged. It is probable that the casualty rate in 1918 was the heaviest of any arm of the British forces. Although combat losses in air fighting and bombing were high, the casualty rate for ground attack/ contact sorties was greater, often 30% of aircraft dispatched.⁹⁴ The heavy losses suffered by the RFC during the Somme battles most certainly had a serious effect on morale. It did not help that many pilots felt that these heavy losses were in part at least due to inadequate and

⁸⁸ E. Jones, 'LMF, The Use of Psychiatric Stigma in the RAF in the Second World War' *The Journal of Military History* Vol 70 (2) (2006), pp.439-458; p.450.

⁸⁹ C. J. M Goulter, *A Forgotten Offensive, RAF Coastal Command's Anti-Shipping Campaign 1940-1945*, (London, 1995) p.155.

⁹⁰ Wells, p.102.

⁹¹ Jones, *TWITA*, Appendix XXXV, p.160.

⁹² Jones, *TWITA*, Appendix XXXV, p.160.

⁹³ Jones, *TWITA*, Appendix XXXVI, p. 155.

⁹⁴ A. Gould-Lee, *Open Cockpit* (London, 1969), pp. 162-163.

outgunned aircraft. These combat losses were in addition to the many aircrew killed in accidents, 491 on the Western Front. Additionally, there were possibly twice as many in England in training and on the home defence squadrons. The extremely high casualty figures for 1917 and 1918 also affected the morale of the squadrons on the western front.⁹⁵

In both world wars, morale on RFC/RAF squadrons was significantly affected by casualties. The casualty rate which is bearable (without loss of fighting spirit) depends in large part on two factors, firstly whether the individual feels that he has a chance to survive and secondly whether the unit is successful enough for his sacrifice to be acceptable. As the casualty rate varies so does the unit morale change.⁹⁶

Willingness to Fly (LMF)

One sure indicator of low morale on a flying unit is a reluctance of aircrew to fly and to find excuses for not completing or turning back on operations. An example of this relationship is found in the operations of the Independent Force in 1918 the three day squadrons suffering most casualties (and aircrew breakdown) had the highest percentage of early returns: 12% of aircraft despatched in each case.⁹⁷ Many of these cases may have been avoided if aircrew had been rested and morale

⁹⁵ See chapters five and six of this work.

⁹⁶ Patinson, *History of 99 Squadron*, p.30.

⁹⁷ Jones, *TWITA* Appendices Appendix XIII pp. 52-86

would certainly have been enhanced and maintained if a limit on their exposure to danger had been provided.

In the Air War of 1914-18, there seems to have been little or no consideration as to how long aircrew could remain effective in combat. In trench warfare, it was recognised that front line troops should be given rest and be moved out of the line, but although Trenchard on occasion accepted that individuals should be rested (sometimes after they had requested a rest) he failed to institute any firm policy about 'tours' for aircrew.⁹⁸

Nevertheless, it seems to have been accepted generally, that after six months' survival in a front-line squadron, aircrew might be returned to the Home establishment, often as instructors (just as dangerous as operational flying). In fact, aircrew survival times at the front averaged between eight weeks and four and a half months depending on the level of air activity, although there were periods during which many pilots and observer's survival time was less than a week.⁹⁹

In the Second World War operations, heavy casualty rates had a similar effect on morale which was often shown by crews returning for 'technical' or 'personal' reasons before reaching their targets: jettisoning bombs over the sea, or, when approaching the target 'creeping back' (dropping early).¹⁰⁰ There was also an

⁹⁸ Albert Ball, one of the major British 'aces' requested a rest in July 1917, he returned to the Front in early November and was killed soon after. see *AP125 The Royal Air Force*....194-195. J H Morrow Jr *The Great War In The Air* (Airlife Publishing, 1993) pp. 173.

⁹⁹ D. Winter, *The First of The Few*, (London, 1982), pp 152-153; See also Pattinson, *History of 99 Squadron*.

¹⁰⁰ Webster & Frankland Volume II p.194.

increase in crew sickness and a lack of confidence in the chances of survival. It should be noted that these symptoms of low morale are like these exhibited by U-Boat crews in 1943, noted above. In Bomber Command during the 'Battle for Berlin' in 1944 there was severe criticism of bomber crews by the C-in-C of the pathfinder force, that:

the amount of bombing on the markers which they dropped was negligible.....many bombs are wasted en-route in an effort to increase aircraft performance and that unfortunately the command suffered from many "fringe merchants."¹⁰¹

Although Harris (C-in-C Bomber Command) was aware of the tendency for the 'bomb line' to creep back on operations against difficult targets, he did not respond to this criticism.

The exceptionally losses suffered by Coastal Command on anti-shipping sorties, on some operations 45% of aircraft attacking, certainly affected morale and led to a perception among crews that they were being sent on 'suicide' operations.¹⁰²

In the USAAF statistical records were kept on 'early returns' and it was noted that in January 1944, 109 (5%) aircraft returned because of 'personal failures', which could include physical problems or crew difficulties. The rate of returns was used as an indicator of unit morale.¹⁰³ The rate of early returns was also a cause for concern in the Canadian Bomber group (Group 6) of Bomber Command, particularly in the 'Berlin' campaign in 1944. As noted in the 6 Group history:

¹⁰¹ Webster & Frankland, Volume II p. 196.

¹⁰² Goulter, p.146.

¹⁰³ Wells, p.105.

A good measure of morale among aircrews on a squadron was to be found in the records of early returns. As the Berlin campaign progressed, the numbers of early returns increased, but never enough to jeopardize operations. Most of the young men swallowed their fears and got on with the job. Many have harsh memories of the few who dumped bombs *en route* to their targets so that they might gain more altitude.¹⁰⁴

As noted above, it was the rate of losses in the early raids by the RAF in World War Two led to the introduction of set requirements to be met before aircrew were given a rest from operational flying.

However, some aircrew were unable to fulfil their commitment to complete a tour for physical or physiological reasons and caused considerable difficulties regarding their treatment and disposal. The problem was first noticed in the RAF after the daylight raids in 1939, with their losses of up to 50%. Based upon First World War experience the Medical Training Manuals had expected that there would be some incidence of anxiety and depression after operations, but it had been anticipated that these be found only in men who had been fatigued by a long period of operational duty.¹⁰⁵ It seems that little or no account had been taken of the medical evidence concerning aircrew psychological disability in or soon after the First World War.¹⁰⁶

Wells discusses the extraordinary strains placed on aircrew in the allied bombing campaign in the Second World War. These strains included, accidents (10% of casualties), new and complex aircraft. bad weather. stress of operations being

¹⁰⁴ S. Dunmore & W. Carter, *Reap the Whirlwind*, (McClelland & Stewart: Canada, 1991), p.212

¹⁰⁵ D D Reid, 'The Historical Background to Wartime Research in Psychology in the Royal Air Force' in E R Dearnaley & P B Warr, *Aircrew Stress In Wartime Operations* (HMSO, 1947), p. 2.

¹⁰⁶ N S Gilcrest, 'an Analysis of the causes of breakdown in flying' *BMA* volume 2 1918; *Committee of the War Office Enquiry into 'Shell-Shock' Cmd 1734* (1922)

delayed and subsequent waiting and perhaps most stressful of all-seeing friends and comrades die. As he noted, it is not surprising that some men failed to win their personal battle when the only reward was survival, which the statistics showed to be unlikely.¹⁰⁷

In the event, medical officers noted that appearance of fatigue, a facial tic and undue irritability, and such physical ailments as insomnia and gastric pain, which were recognised as the symptoms of a possibly disabling condition indicating the need of a rest, appeared in men who had carried out few or in some cases, only one operation.¹⁰⁸

This unexpected and serious problem arose following these early operations when some men who had been subjected to no special stress reported that they were unable to carry out their operational duties. The Official RAF Medical History noted:

That Flying Stress existed was not admitted by many experienced aircrew. They held that all cases were 'Lack of Moral Fibre'. The majority of personnel who held this view were of a type who did not know or would not recognise danger when they met it.....their operational flying was less of an ordeal than for the majority of aircrew who possessed a higher degree of introspection. On the other hand, many aircrew were equally emphatic that flying stress did exist and was a real problem. In their own experience they had known the effects of marriage, family responsibilities, living out and the effects of alcohol and other factors on their flying performance.¹⁰⁹

These differing views did not help to simplify the problem especially as there was also a feeling among the flying Branch of the RAF (General Duties Branch) flying

¹⁰⁷ Wells, *Courage in Air Warfare*, p.61, pp.63 -69.

¹⁰⁸ Reid, 'The Historical Background', pp. 2-4.

¹⁰⁹ Rexford, *Royal Air Force Medical Services Vol II*, p. 126.

stress was synonymous with LMF and it was very difficult to draw a line on one side of which a man is a coward and on the other he is a victim of circumstances beyond his control. As Reid pointed out:

For a fighting service at war, such men pose a difficult and delicate problem. If they are excused operational duty but retain the privileges and prestige attached to flying status, such action is bound to engender a feeling of resentment among those who have successfully struggled to control their own anxiety and fear and continue to face the perils of war. On the other hand, morale is also affected when men believe that a comrade has been harshly and unjustly treated.¹¹⁰

The RAF elected to treat this problem as an administrative matter rather than a psychological diagnosis and introduced a label of LMF (lack of moral fibre) to classify aircrew who refused to fly without having an acceptable medical reason.¹¹¹ This was a controversial matter, with operational commanders supporting a system which deterred aircrew from avoiding duty. On the other hand, the RAF medical branch, particularly squadron medical officers, who were aware of the needs of those in their medical charge and who often sympathised with them, took a more cautious view. The Official History of the RAF Medical Services describes the separation of responsibility:

The view held at Command and Group by the medical staff was that the maintenance of morale was essentially an executive responsibility and that the postponement of the inevitable effects of flying strain depended chiefly on morale and on the method adopted to sustain this at a high level. It was considered that strain could not be endured indefinitely and that a station medical officer's usefulness in this sphere depended on his practical knowledge of flying personnel and their environmental conditions and on his ability to detect the early onset of strain before this became cumulatively disabling.¹¹²

¹¹⁰ Reid *The Historical Background*, p. 4.

¹¹¹ Jones, *LMF*, p.439. Sometimes these cases were classified 'having lost the confidence of his commanding officer'.

¹¹² S. C. Rexford-Welch, *Medical History of The Second World War, The Royal Air Force Medical Services Vol II Commands* (HMSO, 1955) p.124

Most commanders (especially squadron commanders) seem to have taken a similar view to that of Air Chief Marshal Harris C in C Bomber Command, who had little sympathy with those '*weaklings and waverers*' who may contaminate others.¹¹³ Group Captain Leonard Cheshire, one of the RAF's most decorated airmen , certainly took this view, he said:

I was ruthless with 'morale fibre cases' I had to be. We were airmen not psychiatrists. Of course, we had concern for any individual whose internal tensions meant that he could no longer go on; but there was the worry that one really frightened could affect others around him. There was no time to be compassionate as I would like to have been. I was flying too, and we had to get on with the war ¹¹⁴

It is fair to add that Harris did appreciate the role of the medical officer in making the decision as to whether a man was to be classified LMF:

It is possible for a good doctor to anticipate the onset of stress and to encourage and assist some individual through a passing phase of slight loss of confidence... he can also advise the CO whether an individual is a genuine case of stress.....or should be dealt with disciplinary means under Air Ministry procedure.¹¹⁵

The view held by the medical staff was that the maintenance of morale was an executive responsibility and that the postponement of the inevitable effects of flying stress depended on morale and the methods used to sustain this at a high level.

¹¹³ Probert, *Bomber Harris* p. 212

¹¹⁴ Wells, *Courage and Air Warfare* p.200 quoting H Macmaddie, *Hamish: The Story of a Pathfinder* (London, 1989).

¹¹⁵ Probert, *Bomber Harris*, p.213.

Although the number of aircrew stigmatised as LMF was very low, (about 20 per month in 1943)¹¹⁶ there was a continuing feeling by Group and Command leaders that any lenient treatment of these airmen could lead to a widespread lowering of morale.¹¹⁷ Additionally, a fear of contagion among other crews was the result in aircrew adjudged to be classified LMF being removed from units immediately¹¹⁸ Punishments were severe; an officer's commission was terminated and he was refused any further service employment, NCO aircrew were reduced in rank to airman and if he had a ground trade, was re-mustered to that trade without promotion prospects. If no ground trade was involved NCO aircrew were reduced to the lowest rank of airman. In all cases, all aircrew flying badges were forfeited.¹¹⁹ On the other hand there likely to be considerable resentment among aircrew if somebody who had clearly done his best (say 10/12 operations) was treated harshly. This concern about resentment may be one reason that from 1942 aircrew on their second tour were excluded from the LMF provisions.¹²⁰

It seems that these penalties were in the end deterrent enough, as although there were fears for the morale of Bomber Command crews in at least two periods

¹¹⁶ Rexford, *The Royal Air Force Medical History Vol II* p.124.

¹¹⁷ Jones, *LMF* p. 440. Also A. D. English, 'A Predisposition to Cowardice? Aviation Psychology and the Genesis of LMF', *War and Society* Vol 13 (1) (1995) pp. 15-23; p 23.

¹¹⁸ Wells, *Courage and Air Warfare*, p. 87.

¹¹⁹ J. McCarthy, 'Aircrew and 'Lack of Moral Fibre' in the Second World War' *War and Society* Vol 2 (1984) pp. 87-107; p. 88.

¹²⁰ Wells, *Courage in Air Warfare* p.192-183.

during the campaign, the number of aircrew categorised as LMF was never more than 300/400 a year.¹²¹

The USAAF also had to contend with a threat to morale by aircrew who deliberately avoided operational duty by ‘subterfuge, feigned illness or outright refusal’. By 1942 it had adopted the term “Temperamental Unsuitability” for these cases, which by the end of 1943 amounted to about 200/300 a year.¹²²

As with the RAF there was some difficulty with the medical definition of this condition, which in practice was treated like the RAF’s LMF classification, although some medical authorities disliked the term:

Since the most significant defect lies less in the strong tendency to develop anxiety under stress than in the attitude toward the anxiety, ‘lack of moral fibre’ comes closest to describing the reaction. Yet ‘moral fibre’ is not a good term, since it implies a philosophical or ethical value in an attitude which for most soldiers is based simply with on identification with a group. Whether the group is right, whether its aims and purposes are ethical, whether giving ones devotion to it show ‘moral fibre’, must be left to history to decide.¹²³

The USAAF treated the threat to morale caused by these cases in a similar way to the RAF. Officers lost their commission and were reassigned or were dismissed from the service. Enlisted men were reduced in rank to private, removed from flying status and assigned to basic duty.¹²⁴ At first unlike cases in the RAF, officers and enlisted men were not at once removed from the base and this lenient approach did affect morale, particularly as some reassigned enlisted men received accelerated promotion because of manpower shortages:

¹²¹ Jones *LMF*, p.452

¹²² Wells, *Courage in Air Warfare*, p.174.

¹²³ Grinker & Spiegel *Men under Stress*, p. 77.

¹²⁴ Wells, p.174.

It was not long before combat flyers began grumbling about this situation, particularly as the increasing tempo of operations caused an increase in the numbers of these grounded airmen, so hard feelings against them and against flight surgeons who had let them escape combat grew more pronounced.¹²⁵

Action was taken in both matters and by 1943 not only were men removed from stations immediately, but discipline had hardened to the extent that some cases of LMF were court-martialled and not only dismissed the service, but in some cases sentenced to two years hard labour.¹²⁶ Arguably, the measures introduced in both services to ensure that discipline and fighting spirit were maintained, properly addressed the difficulty noted by Dr Reid of possible resentment if LMF was treated too leniently or illness too harshly.¹²⁷ Although both services suffered periods when the command was concerned about the state of morale, there was never a time when operations were threatened by a failure of aircrew to maintain their fighting spirit. It is also clear that the maintenance of what the USAAF report described as 'high or fairly high' morale was achieved in both services throughout a long campaign with very heavy casualties, by:

the early realisation that after a certain number of missions or combat hours-varying according to the nature, intensity and locale of operations, a hypothetical average flyer would decline in efficiency and, if not relived in time, "burn-out" led to the development of a system of aircrew rotation.¹²⁸

¹²⁵ Wells, p.167.

¹²⁶ Wells, p.170.

¹²⁷ Reid, *The Historical Background*, p.4.

¹²⁸ *Morale in the AAF in World War II* p.64.

It is an interesting point that neither air force felt that there was any need to consider that the morale of their ground crews needed to be maintained by being relieved or rested, even when serving in difficult climates.

It is accepted that using such measures as early returns, numbers of men reporting sick or the disciplinary record of a unit as indicators of the state of morale of aircrew and its variation over time, is subject to problems of interpretation. However, despite these difficulties, it is argued that it is practical to assess the overall state of morale by the performance of squadrons.

The treatment of aircrew failure in the First World War was based on that given to those officers and men who had been withdrawn from the front line in France for shell-shock or war neurosis and treated as a medical rather than a disciplinary matter.

However, the early return rate was clearly an indicator of squadron morale, as evidenced by the Independent Force operations in 1918, when all day squadrons suffered heavy casualties and significant numbers of early returns. Two squadrons (99 & 104) were withdrawn from operations whilst replacement crews were trained, and morale recovered.¹²⁹

The factors which have the most significant effect on both individual and unit morale were, as in all conflicts, Training, Leadership, Equipment (including

¹²⁹ Jones, *TWITA* Appendix XIII pp. 52-80, June-November. Although it is true that for part of this time the DH9s struggled with an unsatisfactory engine, a high return rate continued after the arrival of the replacement 'Liberty' engines; L A Pattinson, *History of 99 Squadron* (London, 1920), p.30. Pattinson was Commanding 99 and noted his concern about morale.

aircraft, both British and enemy) and personal and unit successes. One factor which arguably had an always a positive upon RFC morale was that living conditions generally were good. Although in the early months RFC squadrons were subjected to some turbulence and changes in bases and support services, by mid-1916 most squadrons had a reasonably permanent base and when changes were made, they were planned. It is clear from many personal accounts of RFC aircrew that they felt, especially when compared with soldiers in the trenches, that they had a comfortable situation. Additionally, at least until 1918, when the air intensified most aircrew had reasonable rest periods between combat actions. By 1918 some squadron aircrew suffered from fatigue due to continuous operations. The report of the War Office Committee of Enquiry stated that chief among all factors of importance in diminishing the incidence of ‘mental disorders’ in the field was *morale*¹³⁰. It is submitted that statement applies equally to the Royal Flying Corps/Royal air Force.

The factors affecting morale, especially casualties and leadership, will be examined in subsequent chapters of this work to assess their effect on personal morale and aircrew psychological disorder.

¹³⁰ Cmd 1734 *Report of the War Office Committee of Enquiry Into "Shell Shock"*, (HMSO, 1922) p. 151.

Chapter Two

Recruitment

This chapter will consider the recruitment of aircrew for the RFC and the RNAS in the First World War. Selection of suitable candidates is a necessary pre-requisite for any fighting service, but as will be seen, recruitment of flying personal for the British air services was from the beginning haphazard and remained a problem throughout the war. The fact that no assessment of psychological aptitude for flying took place was probably a major factor in both the accident rate and failure rate in training. Even when psychological failure in aircrew was a recognised medical problem, recruitment selection involved no psychological input. However, it should be remembered that there was no precedent for aircrew selection and both selectors and candidates knew little about aviation.

In early 1910, following government concern about Germany's aggressive attitude and public alarm about Britain's lack of any aerial force, the War Office decided to enlarge the scope of the Balloon Factory, the only military unit concerned with aviation. Accordingly, the formation of an Air Battalion of the Royal Engineers was announced.¹

The unit was entrusted with:

The duty of creating a body of expert airman, organised in such a way as to facilitate the formation of units ready to take the field with troopsin addition the training and

¹ C. F. Snowdon-Gamble, *The Air Weapon Vol 1* (Oxford, 1931), pp.126-127.

instruction of men in handling kites' balloons and aeroplanes, will also devolve on this battalion.²

The order setting up the battalion enacted that officers would be selected from 'any regular arm or branch of the service on the active list,' but were required to possess certain qualifications, including previous experience of aviation and the possession of a Royal Aero Club Certificate.³

It should be noted that initially few officers were needed by the air battalion as its total officer strength was fourteen officers only, divided between No 1 Company (Airships) and No 2 (Aeroplanes). In 1909 the Committee of Imperial Defence recommended that a rigid airship be built for the Royal Navy.⁴ At that time, bearing in mind the very short endurance of early aeroplanes, it is not surprising that the Admiralty felt that the airship would be more useful operating over the sea than the aeroplane and therefore put most of its effort into the developing airships. Nevertheless, it did take some interest in aeroplane development, particularly when a member of the Royal Aero Club offered to lend two aeroplanes for naval officers to learn to fly free of charge. The offer was accepted, and a General Fleet Order (December 1910) stated that two machines were at the disposal of naval officers. (four officers were allowed to take up this offer).⁵ In fact, by January of 1911, the Admiralty had decided that aeroplanes

² Snowdon-Gamble, p.126. Army Order of 28th February 1911.

³ The other requirements were, rank not above captain, medical fitness for air work, good eyesight, good map reader, unmarried, not less than two years' service, under thirty, good sailor, taste for mechanics, under 11 stone 7 pounds.

⁴ R. D. Layman, *Naval Aviation in the First World War* (London, 1996), pp. 36-37.

⁵ *AP 125 The Royal Air Force in the Great War* (Air Historical Branch, 1936), p.16.

might after all be useful and following a lecture on aviation by Colonel Massey of the 'Aerial League of the British Empire' to officers of the Home Fleet, officers were invited to apply for an 'aviation course': some two hundred applied, three were selected.⁶ An indication that the Navy accepted the aeroplane into naval aviation, was the decision that the airship bases on the east coast would be for 'airships and seaplanes'.⁷

The number of pilots required by the Air Battalion and the Royal Navy during the period up to the formation of the Royal Flying Corps was very small and both services could easily obtain the required number of pilots, virtually all of whom would be serving officers.

However, in 1911 a sub-committee of the Committee of Imperial Defence (CID) was instituted to examine the state of Britain's air defence, which was much inferior to that of France and Germany. The committee recommended the setting up of a unified air service, with naval and air wings and a Reserve. This imaginative idea, accepted by the CID, resulted in the formation of the Royal Flying Corps which almost immediately caused problems, particularly for the Royal Navy.⁸ The RFC absorbed the Air Battalion and the Naval Air Service. into one organization and the intention

⁶ *AP 125 The Royal Air Force*, p.151.

⁷ W. Raleigh and HA Jones, *Official History of the War: The War in The Air Vol 1* (London, 1922-37), (henceforth-*TWITA*) pp. 264-265.

⁸ Raleigh, *TWITA*, Volume 1, pp.198-243.

was that the RFC would maintain both a Naval and a Military wing.⁹ Putting all aviation matters into a unified organisation, was a sound idea. However, it soon became apparent that the Admiralty had a different philosophy and it seems more money to spend on aviation, as during the next two years the Navy ordered a number of new aircraft directly from the new air industry whilst the Army (RFC) continued to be reliant on the Government controlled Royal Aircraft Factory.¹⁰ The Naval wing with the active support of the more technically minded and independent Admiralty, continued to develop separately until on 23 June 1914 the Admiralty unilaterally established the Royal Naval Air Service.¹¹

At the outbreak of war in August 1914 the military wing of the RFC had a total strength of 147 officers and 1,079 men and 179 aeroplanes.¹² At the review of the fleet in July 1914, shortly after the formation of the RNAS, seventeen seaplanes and two flights of aeroplanes flew past the fleet; almost the total strength of the RNAS at that time.¹³ Concerned by the minimal numbers of active pilots available at the start of the war Colonel Sefton Brancker (Director-General of Military Aeronautics) obtained a list of all qualified pilots in the UK and discovered that although there were 862 holders

⁹ The Royal Flying Corps was constituted by Royal Warrant on 13th April 1912.

¹⁰ C. Cole & E. F. Cheeseman., *The Air Defense of Great Britain 1914-1918* (London, 1984) p.3.

¹¹ *AP 125 The Royal Air Force*, pp 22-23. On 1st July 1914 the Naval Wing re-organized, introducing a new rank structure and was renamed RNAS. This was the start of a long struggle between the two services, intensified with the formation of the RAF in 1918 and continuing until the present time. The struggle was mostly at political and High Command level and largely about resources, cooperation was willing and effective in two world wars at the operational level

¹² P. G. Cooksley, *The Royal Flying Corps Handbook 1914-1918* (Stroud, 2000), p.19.

¹³ Raleigh, *TWITA* Volume 1, pp.273-274.

of the RAeC's Certificate only 55 of those were competent enough for active service.¹⁴ This shortage was emphasised shortly after the outbreak of war, when all the trained pilots available to the RFC were sent to France with the four active RFC squadrons which flew to France (12th August) with a fifth squadron following a few days later. Even before they went into action on 19th August, two aircraft had been lost with the deaths of two pilots (and two mechanics), their replacements being the first of thousands of aircrews recruited, trained and sent to France, the Middle East and Italy. Additionally, the RNAS, which was (until February 1916) responsible for the air defence of Great Britain, required some hundreds of pilots and observers. Both services relied on the output of the Central Flying School for all their pilots and even before the outbreak of war it was clear that the school was not large enough to meet the needs of both services.¹⁵

To help meet the immediate demand for trained pilots, all civilian flying schools were either closed or taken over by the War Office and the pre-war policy of making pilots pay for their own training discontinued.¹⁶ There was in fact, no shortage of volunteers from serving personnel who could meet the qualifications required by the Air Battalion, (now the RFC) which were:

- 1 Selected from members of Regular Services
- 2 Possession of Aviators Certificate
- 3 Previous experience of Aeronautics

¹⁴ Raleigh *TWITA Volume 1*, pp 422-421; D. Winter, *The First of The Few* (London, 1982), p.18.

¹⁵ *AP 125 The Royal Air Force*, pp.11-12.

¹⁶ *AP 125 The Royal Air Force*, p.35.

- 4 Good map reader and field-sketcher
- 5 Not less than two years' service
- 6 Good sailors
- 7 Aptitude for mechanics¹⁷

These requirements (apart from 'previous experience') could easily be met by the average Army Officer, and the flying personnel of the four squadrons that went to France in August 1914 were drawn from forty different regiments. Only a few direct entry pilots had joined the RFC Reserve and they were still training.¹⁸

However, it soon became clear that service sources would not be able to supply enough aircrew and in 1915, to facilitate the entry of civilians and other ranks in the services who wished to volunteer, a Cadet Wing was formed.¹⁹ The minimum age for entry was eighteen, although some aircrew were accepted who were younger.²⁰ The actual selection of aircrew was arbitrary with a great deal of emphasis placed on the initial interview. Many writers have described this interview, and much has been made of the questions asked the candidate, especially the frequently asked 'can you ride a horse?' Some writers have taken this to be an example of class bias in selecting those who could be assumed to have an aptitude for flying.²¹ Although this question does not seem to be particularly relevant to flying, in 1914 it was a logical one. Few people (including the officers responsible for selection) had any experience of flying. On the

¹⁷ AP 125 *The Royal Air Force*, p. 9.

¹⁸ R. Barker. *The Royal Air Force in World War One* (London, 1995) p. 22.

¹⁹ AP 125 *The Royal Air Force*, p.75.

²⁰ C. Lewis, *Sagittarius Rising* (London, 1936) p.10.

²¹ D. Winter, *The First of the Few* (London, 1982) p.19-20; R Money, *Flying and Soldiering*, (London, 1936) p.10.

other hand, at that time, many people would have some experience of horses. Horse riding demands self-confidence, a measure of co-ordination, and some nerve, particularly if hunting or point to point racing. In fact, at that time 'to be familiar with horses and horsemanship was an outstanding recommendation'.²² Another question which was often asked was; 'have you sailed a boat?' an activity requiring similar qualities.²³ No consideration was given to the psychological fitness of recruits for flying, presumably it was felt that as most flyers were chosen from officers of the Army or Royal Navy, selecting recruits from similar backgrounds was a sound system. And it is fair to note that as in the BEF, where the extent of the effects of 'shell shock' on ground troops was a surprise, psychological disorders occurring to flyers operating in this new environment were not anticipated. In any case, there was at that time, little knowledge of the physical or psychological effects of flying or the reactions of pilots and observers to operating and fighting in this new environment.

Flying was still a novel activity in 1914, sustained flight was only a few years old and the use of the air in war was almost unknown.²⁴ The early recruiters for the RFC undoubtedly preferred candidates who came from the social elite, particularly public school or university graduates. Those who had showed enthusiasm for sports were also favoured. Of course, many of the first volunteers were from serving officers, who

²² D. H. Robinson, *The Dangerous Sky* (Henley, 1973) pp.83-84.

²³ N Macmillan, *Into the Blue* (London, 1929).

²⁴ P. Lewis, *The British Bomber Since 1914* (London, 1974) pp.18-19. The first use of aircraft in war was in 1911, when in the war between Italy and Turkey, fought in Libya, the Italians dropped four bombs on the Turkish troops.

would in any case be from that background, so it would be natural for recruiters to use the same criteria for selecting civilian volunteers. The aviation press (small but noisy) noted that ‘adventurous youth’ would need ‘nerve’ to fly’ in the war.²⁵ It is worth noting during recruiting in 1914 and 1915, the first period of expansion, the press and public were not yet being subjected to glamorised accounts of air fighting as ‘duelling in the clouds’ by handsome aviators with the RFC described as the ‘Cavalry of the Clouds’.²⁶

By the middle of 1915, losses were steadily increasing, and the RFC was at the beginning of its expansion to (eventually) 93 squadrons in France and more aircrew were urgently required. The Army also needed officers to replace the huge losses and recruiters were forced to widen the net. During the period of expansion and development of the RFC and the RNAS, assessing the qualifications and qualities needed to be a successful pilot or observer was largely a matter of guesswork and opinion. There was a vague sense that the qualities thought to be possessed by the products of the English Public-School system might be appropriate, but aviation was new, and nobody was sure. However, Sefton Brancner, an early pilot himself and very much involved with the organisation and development of the RFC (he was

²⁵ *The Aeroplane*, 2 September 1914.

²⁶ L. S. Cobden. ‘The Nervous Flyer; Nerves, Flying and the First World War’ *British Journal for Military History* Vol 4 (2018) pp.121-141.

Director of Air Organisation), was in no doubt about the qualities required of an RFC pilot:

The popular impression is that a special temperament is required for success in the air, it is rather assumed that an artistic temperament, a vivid imagination, careless and reckless daring are great assets in the psychology of a pilot. I have always found that the most useful pilot in war was the man who would have made the best officer in the old regular army.....unimaginative but absolutely reliable-courageous and honourable to a fault, rather stolid, devoted to the hardy sports of the hunting field and the jungle and caring nothing for the artistic side of life-this type could usually be trained into a useful pilot at almost any age within reason. But most unexpected people turned into good pilots. Age was always a most debatable point. Young men naturally learn more quickly and easily than those bordering on thirty, but they do not last as long under active service conditions. The demands of war forced us to train boys of eighteen, or even seventeen to fly and then send them off to the front, but I always said that the ideal fighting age was more like twenty-five. There is no doubt in my mind that for peace conditions the younger a man starts to fly the better. During the war it paid us to teach a proportion of older men because they were invaluable as Squadron and Wing Commanders.²⁷

The RNAS had started the war with 130 pilots to cover, in addition to its naval activities, the defence of Great Britain against air attack. By January 1917 this number had grown to 839 and there were some 300 observers on its strength.²⁸ Casualties among naval squadrons carrying out naval roles such as reconnaissance or anti-submarine work were relatively light. However, in 1916 several naval squadrons had been attached to the RFC in France and in common with that service, subjected to the 'same deadly problem of attrition' ²⁹ It was this intensification of air fighting

²⁷ N. Macmillan, *Sir Sefton Branckner*, (London, 1935) pp.38-39.

²⁸ *AP 125 Royal Air Force*, pp.274-275 & p.421.

²⁹ S. F Wise, *Official History Of The Royal Canadian Air Force Vol 1 Canadian Airmen in the First World War* (Toronto, 1980) pp.160-162.

in early 1916, with its heavy casualties which first caused concern about RFC and RNAS recruitment.

However, apart from concern about a possible shortage of candidates, it was not long before concern was raised regarding the fitness of RFC recruits. The medical examination was the same as for other Army officers as it was not appreciated that aircrew would face unique conditions and dangers in the air and there was no consideration of the temperamental suitability of candidates for aircrew selection. It had also been alleged that some men disabled by injuries received in combat in France had been accepted for aircrew training.³⁰ The RFC had also found that in the first year of the war, some 65% of all accidents were due to some physical defect in the pilots concerned.³¹

In response to these concerns, a Medical Research Committee was set up to advise the RFC and RNAS on aeromedical matters.³² The committee was led by Major Martin Flack (RAMC), who established six medical examination stations in England to undertake medical evaluations of all applicants for both services.³³ An account of

³⁰ M. Molkenin, *The Centenary History of Australia and the Great War, Volume I Australia And The War In The Air* (Oxford, 2014) pp.51-52. Major James Birley (consultant to BEF) had noted that there was a 'high proportion' of AFC Pilots and Observers' suffering breakdown and he suggested that it may have been partly due to previous service at the front.

³¹ US Air Service- *Medical Chapter VI Report of Officers from England, France & Italy* (US War Department, 1919), pp. 95-96.

³² Robinson, *The Dangerous Sky* p.84. See also H. G. Anderson, *The Medical and Surgical aspects of Aviation*, (London, 1919, 2010) pp.5-19.

³³ Robinson, *The Dangerous Sky*, p.85.

the physiological tests required for aircrew was produced in 1917 by Captain Dudley Corbet, the RAMC officer in charge of the RFC ward at 24 General Hospital Etaples:

If the candidate is found generally fit, he should undergo physiological tests to determine whether he is likely to suffer from dizziness or sickness, and further, to what height he should be able to fly without experiencing symptoms of oxygen starvation. His reaction time to visual, auditory and tactile impressions should be taken in order to test the general alertness of mind and body.³⁴

The medical examination centres set up by Major Flack's committee introduced the tests suggested by Corbett, often with equipment devised by Flack, who also dealt with the provision of oxygen equipment for aircrew.³⁵

In 1915 aircrew losses on the Western Front were sustainable. From the arrival of the RFC in France until December 1914, four aircrew were killed and a further 30 were casualties, either wounded or captured. In 1915, which saw the beginning of serious fighting in the air, 46 aircrew were killed and there were some 193 other casualties.³⁶ However, although this level of casualties was manageable: from early in 1915 new squadrons were being formed almost daily, substantially increasing the demand for trained aircrew. Another significant reason for the great increase in demand for more aircrew, was Trenchard's policy of sustained aggression, first put forward within two days of taking command of the RFC in France (August 1915). This policy intended to meet the needs of the army, was a major reason for the heavy casualty rate

³⁴ D Corbett, *Article in US Air Service Medical Chapter VI* pp.114-115.

³⁵ Medical Research Council. Reports 1-VII 'The Medical Problems of Flying'. Introduction pp.3-4.

³⁶ T. Henshaw, *The Sky Their Battlefield*, (London, 2014). Appendix 3 p.347. Most of these were wounded, but there were some missing or POWs

and in the view of some squadron commanders for the loss of many inexperienced pilots.³⁷

Expansion of the RFC in France steadily increased throughout the air war, so that by 1918 there were 93 squadrons in France. Additionally, there were 14 in the Middle East, 4 in Italy and 16 in the Mediterranean, making a total of 127 squadrons. At home there were 18 squadrons involved in Home Defence and 18 marine squadrons and 56 training Stations each consisting of 3 training squadrons.³⁸ This continued expansion combined with steadily increasing casualties meant that there would inevitably, be a continuous shortage of aircrew with consequent pressure on both recruitment and training.

One way of meeting the demand, not often reported, was the considerable recruitment of non-commissioned pilots, observers and, rarely mentioned, gunners. In fact, the first RFC injury suffered through enemy action was to an NCO observer, Sergeant-Major D S Billing, who was wounded in the leg whilst flying with No 2 Squadron.³⁹ Provision for non-commissioned pilots had been made as early as 1912, when in the White Paper setting out the arrangements for the formation of the RFC, it was noted that each squadron would have twenty-six pilots, half of whom would be

³⁷ See Also Chapter Seven, Jones, *TWITA* Volume II p.165; R. Barker, *The Royal Flying Corps in World War One* (London, 2002) pp.278-279 It has been suggested that this offensive policy was in fact introduced by Sykes and continued by Trenchard. See E. Ash, *Sir Frederick Sykes and the Air Revolution* (London,1999), p.42.

³⁸ Jones., *TWITA Appendices: Appendix XXIV* pp. 116-123.

³⁹ Raleigh, *TWITA Vol I* p.301.

commissioned.⁴⁰ The first non-commissioned pilot was Corporal Frank Ridd, who qualified on 4th June 1912. Others followed but numbers were always well below those of commissioned pilots and a return of all officers and aircrew serving with the RFC in April 1916, showed thirty-one non-commissioned pilots on the strength, but only three with squadrons in France.⁴¹ NCO pilots continued to be employed in the RFC until the end of the war, but the ratio of commissioned to non-commissioned was always in the order of about twenty-seven to one.⁴²

For Observer's establishments, figures were only finally settled in 1918, the numbers varying with the role of the unit,⁴³

Role	No & Type Aircraft	Organisation	Observers	
			Officers	NCOs
Fighter/Reconnaissance	18 x F2b	HQ+3 Flts	14	6
Night Flying	18x FE2b	HQ+3 Flts	20	-
Day Bomber	18x DH 4/9	HQ+3 Flts	14	6
Night bomber	10x HP 0/400	HQ+2 Flts	5	11
Corps Reconnaissance	24x RE8/FK8	HQ+3 Flts	20	6

Though the figures for observers are clear, the number of NCO pilots can only be estimated as one or two per squadron. By 1918 the shortage of aircrew generally was such that the:

⁴⁰ Snowden-Gamble, *The Air Weapon*, pp.167-189.

⁴¹ G. C. Jefford, *Observers and Navigators*, (London, 2014) p.97.

⁴² It is worth noting that one of the Victoria Crosses awarded to RFC personnel was to Sergeant Thomas Mottershead of No 20 Squadron.

⁴³ Jefford, *Observers and Navigators* p. 97. Effective date 1st April 1918 (formation of RAF).

whole of the class from which army officers come had been absorbed into the service and could no longer be counted upon to yield the requisite number of flying personnel. Consequently, it was arranged that there should be pilots and observers of NCO grade.⁴⁴

By 1918 the RAF had determined to actively increase recruiting NCOs, although in fact, the war ended before any significant numbers were trained.

One aircrew category which has received even less attention than NCO pilots and observers, is that of the aerial gunner. Since its formation, the RFC had been employing mechanics as 'de facto' gunners, but despite authority given in 1915 for them to be granted observers 'wings' very few had been awarded their flying badge. By 1916, the demand for observer/gunners was beginning to outstrip supply and in April the War Office ordered that arrangements should be made to train enough NCOs and men to fill up 50% of the establishment of the two seater squadrons.⁴⁵ Although arrangements were made to send volunteers to a gunnery school at Hythe, it seems that not many reached the school, but were instead sent directly to a squadron for training. Even that arrangement was haphazard as the experience of infantryman Alfred Koch showed when posted to No 1 squadron:

was given no briefing by the Adjutant or anyone else as to my testing and not a word as to what I should do with myself while waiting. Not a single introduction to anyone, officer, NCO or even airman—and it was a week before anyone before a call came to report to Captain Somebody or other on the aerodrome. Somebody did take pity on me and provided me with a flying coat, mitts, helmet and goggles and the pilot standing by the machine was the first man to take notice of me as a human being.⁴⁶

⁴⁴ *AP125 The Royal Air Force*, p.377.

⁴⁵ Jefford, *Observers and Navigator*, p. 39; Jones, *TWITA* Volume VI, pp. 76-78.

⁴⁶ Jefford, p.38.

Koch was then given a three-minute briefing and then into the air for the first time. His experience or something similar probably happened to many gunnery recruits, as the School at Hythe which could only deal with ten students at a time was overwhelmed and the squadrons in France had to recruit gunners locally. Some were obtained from squadron mechanics, but others were volunteers from the infantry. As these recruits, did not have the benefit of the Hythe training the RFC had to lay down a qualification standard for squadron trained gunners. In 1917, the qualification standard was laid down as one months' probation, during which several tests of technical knowledge and practical skill had to be passed, after which the squadron trained gunners were certified as competent and entitled to the observer's badge.⁴⁷ It is not possible to ascertain how many NCO gunners served in the RFC, partly because many later qualified as observers or pilots. As to NCO aircrew generally, in November 1918, there were 137 NCO observers with the Squadrons in France together with an unknown but estimated, two or three NCO pilots per squadron. Jefford estimated that perhaps some 1000 qualified NCOs flew as Observers in the war. Added to this number should be the many hundreds of untrained NCOs, air mechanics and naval ratings who (especially in the first two years) flew as untrained and temporary crew members.

⁴⁷ Jefford, *Observers and Navigators*, p.39; N Steel & P. Hart *Tumult in the Clouds* (London, 1997) pp.313-315; James McCudden VC the most decorated RFC airman started his career as a 'squadron trained' Air Mechanic Gunner.

It had become clear by 1916, that the huge demand for pilots and observers could not be met from the United Kingdom alone and even with the flow of volunteers from the USA, South Africa and New Zealand demand still exceeded supply. Thus, it was fortunate that early in the war Australia and Canada offered help with the provision and/or training of aircrew. The provision of aircrew from Canada started in a small way with the RFC and the RNAS sending representatives to Canada to investigate the possibility of British born volunteers for aircrew service. This led to an unedifying period in the summer of 1915, when the RFC and The RNAS contrived to ‘outbid’ each other by in turn offering better conditions to applicants.⁴⁸ Later with the co-operation of the Canadian naval and military authorities, recruiting proceeded smoothly. By the end of 1916 the combined total of RFC and RNAS recruits was some 700, about 350 of were certificated pilots.⁴⁹ Despite these encouraging figures there were still problems with tapping into the undoubtedly large numbers of Canadian citizens who wished to volunteer for aircrew duties. There were several constitutional and political problems: which were eventually overcome by General Brancher⁵⁰ after considerable frustration, by applying pressure on General Henderson, (C-in-C RFC) and the Canadian authorities. He continually emphasised the urgency of the aircrew supply position and the need to implement the long-discussed scheme of flying training

⁴⁸ Wise, *Canadian Airmen*, pp.32-33.

⁴⁹ Wise, *Canadian Airmen*, p 39

⁵⁰ Wise, *Canadian Airmen*, p.74. Brancher was the Director of Air Organization in the War Office who had warned early in 1916 that casualties in other arms ‘would make officers increasingly difficult to obtain’.

schools in Canada. Finally, on 23rd December 1915 Canada RFC training scheme was announced.⁵¹ Recruiting in Canada had several advantages over the UK. Apart from the glamour accorded to the still little-known pursuit of flying, there was by volunteering for the RFC the certainty of avoiding service with the Canadian Expeditionary Force. It was also probably helpful that the Canadian recruits were unaware of the heavy casualties suffered by military flyers on the Western Front. The qualifications required for entry to training in Canada were very like those for RFC entry:

Age 18-25
High School Education, including Algebra and Geometry
Speak good English
'have the marks of a gentleman'⁵²

Canadian recruiting was a great success and by the end of the war the Canadian flying schools were producing an average of 230 pilots a month.

The Australian contribution to the war in the air was made not by training aircrew, the Canadian preferred method, but by providing a national air force. Although the Australian government had a national policy of forbidding the transfer of personnel from Australian to British Forces, there was no objection to Australian citizens enrolling in British services. Those Australians who were already serving in the RFC and RNAS, did so well that the Army Council offered to commission 200 men of

⁵¹ Jones, *TWITA* Vol III, pp 292-293.

⁵² Wise, *Canadian Airmen*, pp. 87-88.

the Australian Expeditionary Force into the Special Reserve of the RFC. Notwithstanding their no-transfer policy, Australian authorities agreed to allow this, and 197 candidates came forward: 183 were accepted.⁵³

Despite agreeing to the above arrangement, the Australian Government had in fact already taken action with the aim of forming its own Flying Corps.⁵⁴ Realising the value of an air force for the future as well as the present emergency it had already formed its own central flying school and trained nineteen pilots.⁵⁵ On 27 December 1915, a commitment was made to provide one squadron in Egypt. Additionally, by 1917 another three squadrons were flying on the Western Front under RFC command. The aircrew recruited in Australia received basic training in Australia and advanced training at training bases in England.⁵⁶ The main source of recruitment of aircrews to meet the needs of the Australian squadrons came mainly from men already serving in the Australian Imperial Force, many of whom had spent months in combat. Although selectors commonly felt that such candidates were good material, in February 1918, Major James Birley (Consultant neurologist to the RFC) drew the attention of the Australian Imperial Force (AIF) authorities to the high proportion of breakdown in the Australian Flying Corps (AFC), both pilots and observers and suggested that it might

⁵³ E. M. Curlack, *Official History of Australia In the War of 1914-1918 Vol VIII The Australian Flying Corps* (University of Queensland, 1923) , Appendix No 2, p. 421.

⁵⁴ M. Molkennten, *Centenary History of Australia and the Great War Vol 1* (Oxford, 2014) pp.20-22.

⁵⁵ Curlack, *Official History*, p.422. The Australians had already responded to a request by the Indian government and supplied a 'half flight of aircraft and pilots for service in middle East. This later became No 1 Squadron AFC.

⁵⁶ M. Molkenntin, *Centenary History*, pp. 53-59.

be due, at least in part to their previous service.⁵⁷ In that context an RFC medical report in 1917, concluded (following a survey of active pilots) that as many who did well were men who had served in the trenches. a 'degree of natural selection had been at work'. From this preposition they came to the view that would be better to select men aged 20-27 for aircrew, but that youths of 18-20 would be more efficient in the infantry.⁵⁸

By the end of the war the numbers of officers (nearly all aircrew) on RFC strength had risen from 146 (with another 130 RNAS) to 27,333 plus some 16,681 cadets and NCOs under instruction. A further 291,161 groundcrew supported the 133 squadrons in France, Middle East, Italy and the Mediterranean and the 55 Home Defence Squadrons and the Training units in the United Kingdom ⁵⁹

During the period of expansion and development of the RFC and the RNAS, assessing the qualifications and qualities needed to be a successful pilot or observer were largely a matter of guesswork and opinion. There was a vague sense that the qualities thought to be possessed by the English Public-School system, might be appropriate, but aviation was very new, and nobody was sure. Brankner, quoted above, had a clear view that the standard selection system for the Army officer was enough. On the

⁵⁷ Molkentin, *Centenary History* pp.51-52. No 2 AFC Squadron, with most of its pilots previously involved in Trench fighting, lost three flight commanders to 'war neurosis' which may have led to Birley's report.

⁵⁸ Lt Col. M. Flack 'The Selection of Candidates for Flying', *Medical Research Council, (1917) No 6 The Medical Problems of Flying*, pp.82-83.

⁵⁹ Jones, *TWITA, Appendices* Appendix XXXV; *AP 125*, pp.421-423.

other hand, with the establishment of the medical examination centres and extensive tests selection was more focussed on the right physical requirements of candidates for flying duties.

It was not until 1917 that attention was paid to the psychological attributes required for aircrew service. In that year the Medical Research Council, with the agreement of the Air Council, appointed an Air Medical Investigation Committee to prepare reports on the 'Medical problems of Flying'. One of these reports by Major J L Birley (MO in Charge HQ RFC), stressed the additional qualities required for this service, although he thought that 'flying' temperament was distinguished from fighting temperament he admitted that the exact requirements could not be defined.⁶⁰ A further report by W H R Rivers and Squadron Leader T S Rippon considered whether it was possible to establish a mental aptitude for flying by interview. They interviewed some 37 students already under instruction, with the aim of assessing whether the subjects would or would not succeed as airmen. This report, not surprisingly given the small numbers and the fact that the subjects were already flying, was inconclusive. Although they did recommend candidates as satisfactory or not suitable. They accepted that the attitude of candidates already flying could not fairly be assessed. Another difficulty was that three pupils were killed during the study, including two whom they rated very

⁶⁰ J. L. Birley, 'Temperament and Service Flying' *Medical Research Council, The Medical Problems of Flying* Report No 8 1917.

highly. Rivers and Rippon did suggest that investigation designed to discover mental aptitude for flying should be undertaken before admission to a flying school. It does not seem that any action was taken.⁶¹

It is fair to note that although aircrew recruitment to the RFC/RNAS and later to the RAF remained haphazard, by 1917 the selection of aircrew had been extended beyond the public-school minority and the quality of recruits remained acceptable. However, the lack of effective psychiatric input to the selection procedure was a serious weakness which meant that psychological failure in training continued to be a significant cause of wastage.

Although at times the demand was very high, the glamour of the air, the extra pay, the chance of being commissioned and in some cases, avoiding conscription, meant that there were always enough volunteers, sometimes more than the training establishment could deal with.

⁶¹W R H Rivers & T S Rippon, 'Mental Aptitude for Aviation', *Medical Research Council: The Medical Problems of Flying* Report 12 1917.

Chapter Three

Training in RFC/RAF 1914-1918

Training is a vital factor in the development of morale and fighting spirit. The importance effective training as a major factor in developing morale was recognised in the Report of the War Office Committee of Enquiry into 'Shell Shock':

Training must be continuous. The more a man is training the more skilful he becomes; the more his confidence increases. If a man knows he can do a thing well, he develops confidence in himself. If he knows that his comrades are equally skilful, he gains confidence in them. His confidence is multiplied. Confidence is both contagious and inspiring...Morale is confidence in one's self and confidence in one's comrades...It is the product of continuous and enthusiastic training'¹

In the RFC, the early attempts at pilot instruction were without any consistent plan, system or doctrine: but by 1917 the service had developed a relevant and efficient organisation with training units in England, Canada and the Middle East.

This chapter examines the RFC training experience and the continuing and increasing pressure on training units caused by the wastage of aircrew in combat and within the training organisation itself. As noted in the previous chapter, aircrew, received no psychological assessment before entering the training system. Additionally, the standard of instruction in the first three years of war, was at best, poor. Instructors were appointed usually from newly qualified pilots or those who

¹ *Cmd 1734 Report of the War Office Committee of Enquiry into 'Shell Shock'* (HMSO, 1922) p.208.

had just returned from the front, often suffering psychological disorders. And even worse there was no training system for pilots or observers. As this chapter shows these factors seriously affected training outcomes.

Pilot Training

Unfortunately, the Royal Flying Corps went to war with its pilots and observers trained only to fly the aeroplane and that not always too well. Many writers, including some who served in the war, have criticized this situation which lasted until 1917, but without understanding that it was probably inevitable.² Training of RFC aircrew in 1914 was inadequate and unsuitable because aviation itself was still in its infancy and the use of aeroplanes by the military was only two or three years old, insufficient time for adequate teaching methods to have evolved.³ The RFC itself had only been in existence for two years.

The first aviator's (pilot) certificate to be granted by the Royal Aero Club of United Kingdom was to Mr J.T. C. Moore-Brabazon (later Lord Brabazon) in March 1910; this was the first official 'qualification' for pilots and for some years was all that was

² G. Norris, *The Royal Flying Corps A History* (London, 1982), pp 27-33; I. Jones, *Tiger Squadron* (London, 1954) pp.53-65; D. Winter, *The First of the Few* (London, 1982) pp.28-36; D. Ginnell-Milne, *Wind in the Wires* (London, 1937), pp.10-20.

³ M Paris, 'The First Air Wars-North Africa and the Balkans 1911-13' *Journal of Contemporary History* Vol 26 (1991) pp.97-109.

needed to become a military pilot. The acceptance of this qualification was a major reason for the lack of any effective and co-ordinated training arrangements in the Royal Flying Corps.

The Royal Aero Club test in 1911, essentially just a basic control of aircraft check, required the pilot to carry out, in the presence of an official observer, two five-kilometre flights flown as five figures of eight around two posts set 500 metres apart. A further flight was required on which a height of at least 50 metres had to be achieved. All three landings had to be made within 50 metres of a position nominated by the candidate. By 1914 the only changes to these requirements specified that the height reached now had to be 100 metres and, at 100 metres, the engine was to be switched off and the descent and landing made without engine.⁴ There were several flying schools which taught pilots to a standard to pass the certificate, the standard charge being £75.00. Army candidates wishing to qualify had to pay the cost themselves, but if accepted by the Air Battalion, the cost would be reimbursed. Although the Air Battalion was established to operate both balloons and aeroplanes, the interest in aeroplanes was such that in the summer of 1911 there were 40 applicants for vacancies to fly aeroplanes and none for balloons.⁵

⁴ These requirements were in metres and kilometres because the authority for international standards was the Swiss based *Federation Aeronautique Internationale*, although the tests were administered by the Royal Aero Club.

⁵ C F Snowden-Gamble., *The Air Weapon Volume 1* (Oxford, 1931), p.128.

The need for training new pilots was recognised in the Royal Flying Corps organisation, which included a Central Flying School where it was planned, all future service pilots would be trained. In practice, as with the Air Battalion, all candidates for RFC commissions would first have to learn to fly and obtain the RAeC certificate. As before the candidate would have to meet the expenses of obtaining the certificate, but if he was granted a commission these would be refunded.⁶ Unfortunately, as already noted, the requirements of the RAeC certificate were in no way related to needs of military flying and even the basic handling of the aircraft was inadequate for military operations and it soon became clear that further training for pilots would be required. Accordingly, all RFC Pilots were attached to the Central Flying School at Upavon on Salisbury Plain for a four-month course. The first course started on 17th April 1912 and included instruction in the theory of flight, the internal combustion engine, reconnaissance, and troop formations. The practical side of the course included flying, map reading, engines and signalling.⁷ The flying experience needed to obtain the flying certificates was set out in the formal syllabus which included the matters noted above and the flying tests which had to be passed. They were basic: an adequate number of hours had to be flown

⁶ *Army Order 347* 11th November 1911.

⁷ *AP 125 The Royal Air Force*, pp.11-12.

(a vague and unquantifiable requirement). The navigation test was equally vague: to fly at least 40 miles from base and return.⁸

The number of hours flown rose from an average of about ten on No 4 course to 27 on No 6, (August 1914) when this course was interrupted and its many of its aircraft and most of its pilots were sent to France.⁹

At the end of the course pilots were awarded their Flying Certificate. Obviously, in-flight training and actual time in the air is vital, but in the first year of the war a shortage of aircraft meant that even the relatively few pilots in the system did not receive enough flight time. Even when they did get into the air the instruction given was generally both unscientific and unsatisfactory. In some aircraft there was no dual provision and the instructor would fly the aircraft with the pupil, standing or sitting in any available space. In those aircraft which did provide dual seating, the instructors, aware of the danger in teaching incompetent and inexperienced pilots, were sometimes reluctant to allow the student to have control but felt safer by demonstrating the procedures and shouting explanations.¹⁰ The result was that the instructors did most of the flying and students received little training. When the

⁸ *AP 125 The Royal Air Force* p.11; G. C. Jefford, *Observers and Navigators*, (London, 2014), pp.44-45.

⁹ *AP 125 The Royal Air Force* p.34-35.

¹⁰ G Taylor, *The Sky Beyond* (London,1966) pp.12-13. Sir Gordon Taylor, afterwards a noted Pacific Ocean flyer, experienced this problem and had to demand further instruction. He later discovered that his first instructor had been returned from France after suffering Flying Sickness.

instructor felt the student was ready, he was sent solo to carry out a set of required tasks. Where possible these tasks were monitored from the ground.¹¹ The almost inevitable result of such a method is illustrated by 2/Lt Christopher Binley's experience:

My instructor was a chap whom I am quite certain had had a bad shaking up and thoroughly lost his nerve because I virtually never touched the controls when I was supposed to be having dual. With the result that when I did go solo, I got off the ground all right, but I did a mighty bounce on landing and squashed the undercarriage.'¹²

The War Office was notified when a pilot qualified and shortly afterwards he would be informed that he had been gazetted as a 'Flying Officer', which was an employment grade not a rank, and once he had been gazetted, he was entitled to wear a flying badge. When the course was completed the pilot was awarded his flying badge and a report card was completed grading the pilot as poor, fair, good or very good having been assessed in four aspects of piloting; aircraft handling, cross country flying (navigation), mechanical proficiency and officer quantities.¹³

Although routine orders published the regulations regarding wearing of 'wings' (with frequent reminders), it seems to have been the practice to pilots to sew on their

¹¹ J. Sweetman, *Cavalry of the Clouds* (Stroud, 2010), pp.55-56; J. Hamilton-Preston, *Marked for Death* (London, 2015) pp.127-130.

¹² N. Steel & P. Hart, *Tumult in the Clouds* (London, 1997) p.84, quoting Lt C Binley RFC.

¹³ Jefford, *Observers and Navigators* pp.44-47.

wings as soon as they knew that they were qualified. This practice was encouraged by the fact that, any newly qualified pilot who was selected to act as an instructor, perhaps because he was the best pilot on the course, was given local dispensation to wear ‘wings’ before being gazetted: probably to give him credibility as an instructor.¹⁴ This was truly a case of the blind leading the blind as the experience of an observer (E Lubbock) who later qualified as a pilot showed. He was immediately made an instructor and assigned six students. Within a day, he was sending one solo, but after only ten days experience as an instructor he sent a 2/Lt Ferme solo who lost control and crashed.¹⁵ In 1916, 2/Lt S C O’Grady was made an instructor after 33 hours solo flying and *before* he had graduated. A noteworthy if extreme case is that of the then flight Sergeant James McCudden (later Major, VC. DSO. MC. MM.) who whilst still on the pilot’s course and with only eight hours solo:

When I got to the CFS I was made an assistant instructor and took my first pupil up when I had a total ‘solo’ time myself of eight hours. He did not seem to mind.¹⁶

McCudden noted on the same page that, “a pilot has 24 hours actual flying to his credit before he is considered a competent aviator.” Another unusual point about McCudden’s account is that his own instructor is named as a ‘Sergeant-Major

¹⁴ For this note and for general information regarding RFC training I am indebted to Wg Cdr Geoff Jefford MBE, author of *Observers and Navigators* (London, 2001) and expert on World War One aircrew.

¹⁵ C G Jefford *Personal Communication*.

¹⁶ J. T. B. McCudden, *Flying Fury*, (London, 1919,1968), pp.94-95.

Power' an NCO instructor, which is an indication that NCO pilots may have been more employed than has been realised.

Inadequate instruction was obviously one of the reasons for the horrifying accident rate in pilot training which did not slacken until the introduction of the Smith-Barry system (see below). It should also be remembered that at this early period, there was little understanding of the 'theory of flight' the importance of not overloading aircraft, the effect of 'drag', or the importance of the correct construction and rigging of aeroplanes. Many accidents were caused by low level stalling, often following engine failure, when early aircraft, very light and with many wires and struts, quickly lost flying speed unless at once put into a dive.¹⁷ There were few attitude or engine instruments to help the pilot and in the early aircraft airspeed had to be judged by the sound of the slipstream through the wing struts. One writer has given a graphic description of training in early aircraft:

At the beginning of the war flying the usual military aeroplane may best compared may best compared with riding a rather dilapidated motorcycle with balding and wrongly inflated tyres over a trails course in freezing fog and a gale, refreshing yourself with draughts of neat castor oil. Just getting off the ground and flying in the right direction was difficult, being shot at can have added only marginally to the anxiety.¹⁸

¹⁷ D. H. Robinson. *The Dangerous Sky* (Oxford. 1973), pp.66-67.

¹⁸ J James *The Paladins* (London, 1990), p.50.

An early indication of the wastage which would become common in RFC training was the three fatal accidents in six months at the Central Flying School in 1913/14. In October 1913, Major C G Merrick was killed in a Short Biplane, in March 1914 Captain C P Downer was killed in a BE Biplane and in the same month Lieutenant H F Treeby died in an accident in a Maurice Farman.¹⁹ Each accident was in a different type of aircraft, almost certainly a result of the lack of a suitable training aeroplane. The aircraft usually used was the French aircraft the Maurice Farman MF11. The MF11 was a pusher (engine behind the pilot) aircraft, powered by an 80-horsepower Renault which gave the aircraft a maximum speed of about 60 mph. Although the French used this aircraft in several roles including bombing and contact patrols, the RFC thought the MF11 'unsuitable for fighting'.²⁰ It was a two-seater biplane with twin curved wooden skids projecting in front of the wheels, an earlier model had long skids, and so the MF11 was commonly known as the 'Shorthorn' A student flying the MF11 found that the Shorthorn was:

A queer sort of bus like an assembly of birdcages. You climbed with great difficulty through a network of wires into the nacelle, and sat parked up there, adorned with a helmet, very much exposed to the wondering gaze of men. There did not seem to be any a priori reason why this structure should leave the ground, but after dashing across the aerodrome at 40 miles an hour for some time the thing did imperceptibly and gradually climb into the

¹⁹ W. Raleigh and HA Jones, *Official History of the Great War: The War in The Air Vol I* (1922-37) (henceforth TWITA), pp.237-238.

²⁰ J. W. R. Taylor, *Jane's Fighting Aircraft of World War One* (London. 1919,1990) p.113; *AP 125 The Royal Air Force*, p.393.

air. It was very like a ride on top of an omnibus. The flight was a quiet up to three hundred feet and down again.²¹

Another student's experience of instruction (in 1916) illustrates the inadequacy of the training system well into the war:

He (the Instructor) opened up the engine, took off, climbed to 300 feet, tapped me and yelled 'take her over'. I was petrified I had no idea what to do. I gazed at the control, a sort of cycle handlebar with looped ends, known as the spectacles, set on a central column. Below was a rudder bar for my feet. I timidly rested my hands on the loops and let my toes gently touch the rudder. For a minute the plane kept on a straight course, then the right wing started to drop, the looped bar followed, and she began to slip side-ways. I was fascinated, waiting for something to happen. 'Straighten her up, What the f---g hell are you trying to do, you bleeding idiot? Came the bellow. In a panic I pushed the handlebar away from me. The Rumpety (MF11) dipped her nose indignantly, shuddered, and banked suddenly over. Then the controls were snatched from my feeble hands, and during a full unbroken minute of bellowing in my ear I learned what a wonderful flow of expletives a Flying Corps instructor could possess.' 'you bloody fool' came a bellow in my ear. Desperately, I pressed the bar down further to the right. The right wing dropped steeper and went on dropping.²²

Student pilots started training on the Farman and when considered proficient, usually after going solo and completing several cross-country flights, transferred to a more advanced aircraft, typically the BE2. The BE2b, was a two-seater tractor aircraft (engine in front of pilot), with the two seats in tandem. It was powered by a 70 hp Renault V-8 which gave a top speed of 74 mph at sea level, with a three-hour

²¹ V. M. Yeates, *Winged Victory* (London, 1934, 2010), pp.83-84. Yeates was a World War One Pilot who served on the Western Front. Although this work is a novel, it is generally accepted that it is both autobiographical and factual in its depiction of flying and operational matters.

²² A. G. Lee, *Open Cockpit* (London, 1969), pp 23-24. Lee survived this instruction and the war to become an Air-Vice Marshal in the RAF.

endurance.²³ Most training sorties were necessarily carried out at low level as it took some thirty minutes for the BE2b to climb to 6000 feet. This had the extra problem that the first experience pilots had of high altitude and the effects of anoxia and cold came when they arrived on a squadron. It was only with the introduction of the Avro 504 and the instructional methods of Smith-Barry that realistic training started.²⁴ This included the final flight test; a cross country flight, at the end of which upon returning to base the pilot had to switch off the engine at 3000 feet and glide to a safe landing.

The Royal Navy had maintained its own pilot training establishment at Eastchurch since 1913 despite the formation of the RFC in 1912 and the arrangement that pilots for both services would be trained at the Central Flying School at Upavon. This school continued after the outbreak of war as the main naval flying school when the Royal Naval Air Service (RNAS) was officially recognized.²⁵ Students received similar but arguably better training than RFC students. Training started on the Maurice Farman and progressed to an Avro 504, an aircraft with similar performance and handling qualities to the aircraft used operationally. It had a maximum speed at ground level of 95 mph, could climb to 10,000 feet in sixteen minutes and could

²³ P. R. Hare, *The Royal Aircraft Factory*, (London, 1990), pp.140-147

²⁴ D. Winter, *The First of The Few* (London, 1982) pp.30-31.

²⁵ Jones, *TWITA* Vol V pp.438-439; R.D.B. Davis, (Vice-Admiral) *Sailor in the Air*, (London, 1967) pp.70-74.

stay airborne for over four hours.²⁶ In 1916 RNAS Qualifications were formalised, candidates were posted to the preliminary training schools at Eastchurch, Eastborne, Chinford or Redcar and received 20 to 24 hours basic training. They then passed to Cranwell for advanced training in cross- country flying, navigation, engines, aerial gunnery bombing and wireless telegraphy. The total time spent on this course was almost twice that required for a military trainee. If recommend by the commanding officer, the candidate was then commissioned as a Flight Sub-Lieutenant.²⁷ Not unreasonably, given that naval pilots could expect to spend a lot of time flying over the sea, time was spent studying compasses, including the causes of variation and deviation and the means of obtaining wind speeds at height.²⁸ The RNAS training policy was subjected to the same rigours testing and analysis which was given to operational tactics and aircraft development and training methods revised as necessary. Training units were required to submit regular reports which were compared to those submitted by operational squadrons. If squadron requirements were not met, training methods would be changed.²⁹

²⁶ J. W. R. Taylor, *Janes Fighting Aircraft*, p.50.

²⁷ Davies, *Sailor in the Air* p.72; Jones, *TWITA*, Vol V, pp.440-443.

²⁸ Davis, *Sailor in the Air*, pp.76-77.

²⁹ C. J. M. Goulter, *A Forgotten Offensive*, (London,1995), pp.22-23.

At the beginning of the war, the War Office assumed that the conflict would be of short duration. An unfortunate outcome of this policy was that initially there was no consideration given to establishing a reserve force. As already noted, the Central Flying School was severely denuded both of aeroplanes and instructors to establish the squadrons sent to France.³⁰ However, the error was recognised, and action taken by the RFC to meet the need for trained pilots and within days of the declaration of war a Reserve Aeroplane Squadron was formed at Farnborough, which became No 1 Reserve Squadron when Brooklands aerodrome was taken over as No 2. Additionally, another military flying school was set up at Nethearvon, which in turn moved to Shoreham as No 3 school and in turn other schools were formed to meet the ever-increasing need for aircrew. The same system was used in each case, by a flight of a squadron being detached and becoming the basis of another squadron. An example of this process was when a flight of No 3 Squadron (Major H R Brooke -Popham) was hived off to become the basis of No 5 Squadron (Major J F Higgins)³¹

Although the training organisation had been greatly expanded with the coming of war it had not yet produced instructors with specialised training in instruction, which

³⁰ Raleigh & Jones, *TWITA* Volume V, (London,1937), p.285.

³¹ *AP 125 The Royal Air Force*, pp.34-35.

was a major reason why pilots not prepared or trained for operational flying were sent to squadrons. One pilot (afterwards a successful fighter pilot), complained:

Pupils could honestly claim that they had learned to fly in spite of their instructors, who came and went almost as often as their students crashed. During eight and a half hours flying instruction I had no less than twelve instructors. To this circumstance, coupled with the poor quality of the teaching, I always attributed the weakness of my aerodrome flying.³²

As late as 1916 an Australian pilot trained in the United Kingdom was sent to the front with a total of ten hours' practice and 'no real idea of flying'.³³

The supply difficulties were exacerbated by Haig's request that the RFC squadron strength in France be increased to fifty-six by Spring 1917. This request was finally approved on 15th November 1916. Immediately, the Director of Air Organisation (Brig-Gen W S Brancker) pointed out that the training programme was 10,200 aircrew short and that new requirement would need a further 13,560 men, and that it had only just been possible to replace the 'wastage' of pilots and Observers during the Somme battle.³⁴ Trenchard's demand for a continuously aggressive offensive in the air and for squadrons to be maintained at full strength, meant that the resultant heavy losses were often replaced by inadequately trained pilots, some of whom had

³² I. Jones, *Tiger Squadron, The Story of No 54 Squadron* (London, 1954), p.57.

³³ M. Molkenstin, *Centenary History of Australia and the War in the Air* (Oxford, 2014), p.54.

³⁴ Raleigh & Jones, *TWITA* Vol II p.291.

to be sent home for further training.³⁵ As seen later in this study this situation had predictable effects on both individual and squadron morale.

Notwithstanding the lack of adequate instructors, the RFC Reserve Aeroplane Squadrons (RAS) were intended to function as elementary flying schools, to train pilots to RAeC Certificate standard and provide theoretical and technical ground instruction. The original expectation was that the pilot would then proceed to the CFS. However, the numbers of pilots involved soon exceeded the CFS's capacity and it was decided the Service (operational) Squadrons would have to take up the slack, and act as advanced flying training schools as well as preparing for operations. It was intended that the trainee pilots would spend two months flying the type of aircraft which he would fly on operations. It had been anticipated and accepted that imposing a major training commitment upon active squadrons would stretch their resources to the limit.³⁶ One effect of this policy, certainly unforeseen, which badly affected pilot training was the impact on Home Defence squadrons whose anti-Zeppelin operations took place at night. The Commander of the London Defence Wing (No 18), reporting that No 39 Squadron had been forced to abandon pilot training said:

³⁵ Trenchard was appointed commander of the RFC in France in October 1915.

³⁶ Raleigh & Jones, *TWITA* Vol III p.293.

officers under instructions ill-treated the engines and upset the true-ing of the machines so that it was impossible to expect pilots to fly at night in the machines which had been used for instructional purposes by day, even though they were still serviceable.’³⁷

This dual role of the home defence squadrons did not enhance morale, particularly as they had been flying many sorties in their operations against the Zeppelins, but without success. In 1915 only two pilots had intercepted Zeppelins and the RFC had experienced three fatalities in night landing accidents.³⁸

There were other problems with tasking operational squadrons to act as training units. Although it did increase the flow of new pilots, the ‘part-time’ and interrupted training meant that quality suffered. This problem was exacerbated with the introduction of new types of more advanced aircraft and fighting techniques which meant there was more for a pilot to learn, but which he was not being taught. As noted above, this situation led to pilots arriving in France inadequately trained, with the result that some Commanding Officers returned them to England for further training. In fact, by early 1916 Trenchard was making ‘serious complaints’ to the War Office about the insufficient training of some replacement pilots.³⁹ One of several complaints made he made on 1st January concerned:

³⁷ C.Cole & E. F. Cheeseman, *The Air Defence of Great Britain 1914-1918* (London, 1984), pp.448-449.

³⁸ Raleigh & Jones, *TWITA Vol III Appendix III: German Raids on Great Britain* p.65; D Robinson, *The Zeppelin in Combat* (London, 1962) pp.103-109.

³⁹ Jefford, *Observers & Navigators*, p. 45; A. Boyle, *Trenchard* (London,1962), pp. 172-173.

five pilots of 29 Squadron who have been sent out during the last three days, one has wrecked his machine on landing at St Omer and two others have done the same on landing at their own squadron aerodrome. It seems that pilots require more practice before they are fit to fly DH Scout machines in this country.⁴⁰

In fact, 29 squadron had a total of eleven accidents in France in 1916, with six pilots killed and five injured badly enough to be hospitalised. One unfortunate pilot was injured in a crash on 3rd of July and killed in another on 24th August.⁴¹ Seven of those accidents were either on take-off or landing and it is probable that inadequate training was a contributing factor in these accidents.

In fact, attempts were being made to address some of the outstanding problems of inadequate RFC training outcomes. One important improvement was the beginning of instruction in aerial fighting. This development was a response to a War Office letter to the Officer in command of II Brigade (Brig-Gen J F Higgins):

That as the number of combats in the air is constantly increasing it has been decided that pilots and observers under instruction at home should be trained, as far as practicable in fighting in the air..... Graduated pilots, should be instructed by being opposed to an experienced flight commander.⁴²

⁴⁰ *TNA Air 1/131/15/40/218* (pilots sent to Expeditionary Force with insufficient training)

⁴¹ T. Henshaw, *The Sky Their Battlefield*, (London, 2014) pp.359-360. The unfortunate pilot was Lt W Stobart, *RAFM CC / Incident* 24 August 1916.

⁴² Raleigh & Jones, *TWITA* Vol III p.294.

Shortly after Brigadier Higgins letter, fighting training was given, initially to selected officers. Another major improvement to the training system was the establishment in 1915, of four RFC Cadet Battalions to undertake military training of direct entry pilots and observers and commissioning RFC NCOs and other ranks (later the Cadet Battalions were designated as Wings) ⁴³

Unless they were already commissioned, (most Observers volunteering for pilot training were) all pilots began as Cadets and spent 8-10 weeks, with drill, military law, service organisation, and psychical training before moving on to six or seven weeks of aeronautical studies, including engines, navigation, photography, and artillery co-operation. The student would then move on to an armament school to study machine guns and bombing. Satisfactory completion of the course resulted in advancement to Flight Cadet and posting to a Training depot for twelve weeks flying training: learning to fly Avro 504s.

In March 1916, following the recall of Lt Col John Salmond from France to take over home based training, the requirements for the pilot's certificate were updated.

From March 1916, to qualify for his certificate a pilot had to have:

- a) Flown solo for a minimum of 20 hours;
- b) Flown a 'service' (as distinct from a training) aeroplane satisfactorily;
- c) Made a cross county flight of at least 60 miles;

⁴³ *AP 125 The Royal Air Force* pp.247-249.

- d) Climbed to 8000 feet and remained there for at least 15 minutes then landing with engine switched off, landing within a circle of 50 feet diameter;
- e) Landing twice at night with the assistance of flares.⁴⁴

On average the number of pilots sent to France was about ten a week, barely enough to cover casualties. However, the competence of pilots although generally improved, was still below and the standard required, and squadron commanders continued to complain about the standard of pilots being sent to France.⁴⁵

One result was that pilots were sent back from the front for further training and had to be replaced thus aggravating the shortage of pilots at the front. This problem caused the Deputy Director of Military Aeronautics, Major D Powell to write to the Officer Commanding 5 Brigade in February 1916:

It is not understood how an officer who is reported to be fit for overseas duty should on arrival in France, be found to be so completely unsuited for the duties of a pilot, unless the officers who were responsible for his training and graduation made a very grave error of judgement.⁴⁶

It is likely that a major cause of this situation was the incompetence of instructors. Apart from their inexperience, many were unmotivated: having volunteered to fly in the war they were asked to carry out a dangerous job (as it was) without getting into

⁴⁴ *AP 125 The Royal Air Force*, p.154.

⁴⁵ Boyle, *Trenchard*, p.172.

⁴⁶ Jones, *TWITA* Volume II appendix IV.

the war. On the other hand, many instructors had returned from the France and felt instructing was not a rest but just exchanging one dangerous job for another.

Powell's comments were reflected in Trenchard's complaints about the unsuitability of pilots sent to France and in one case, the Director of Air Organisation, Major-General W S Brancker responded:

Second Lieutenant M A Mills, Royal Irish Regiment and RFC was posted to the Expeditionary force on 24th January 1916 as a BE2c pilot. The Officer Commanding his squadron reports that he was not fit to take his place in the squadron as a pilot. Accordingly, he was sent to HQ for further practice.

He shews but little sign of improvement and appears to have no judgement.

I recommend, therefore, that he be employed as an Observer and pending approval.....

He has been posted to a squadron in the field as an Observer."⁴⁷

This was one of many examples of unsatisfactory training standards even after two years of war, but at least in these cases action was taken to prevent the unsatisfactory pilot concerned from flying on operations. but many did get as far as the squadrons. In one letter Trenchard complained 'A reserve pilot has just smashed his fourth machine, so I'm sending him back for further training'.⁴⁸ Boyle also noted that Trenchard complained to the War Office in April 1916 about the standard of pilot training ⁴⁹

⁴⁷ D.J. Jordan, *'The Army Co-operation Missions of the RFC/RAF 1914-1918'* (PhD Thesis, University of Birmingham 1997), pp.63-64.

⁴⁸ Boyle, *Trenchard* p.172.

⁴⁹ Boyle, *Trenchard* pp.173-174

However, many poorly trained and/or incompetent pilots did get to fly operationally. From January 1916 to December 1917, there were 619 accidents on operational squadrons in France, 136 (22%) were the result of poor handling or judgement by pilots, including, stalling on take-off, flying into trees or other obstacles whilst taking off or landing, losing control in the air and misjudging landings and destroying the aircraft. These 136 accidents cost the lives of eighty-six pilots and observers, with many others injured.⁵⁰

By the beginning of 1917 many of the shortcomings of the system had been accepted and the system re-organised. Civilians and those other ranks volunteering from the Army went first to the Cadet Wings as cadets and were given a grounding in military knowledge, including drill and discipline, care of arms, use of machine gun, topography and military law. They then passed on to a School of Military Aeronautics, where they were taught, theory of flight, aeroplane rigging, aero engines, artillery observation, map-reading, photography, and signalling. This course was intended to last two months, but such was the urgency of the demand for replacements in France it was often reduced to five or six weeks.⁵¹

⁵⁰ Henshaw, *The Sky Their*, Accidents Addendum, pp .357-378.

⁵¹ *AP 125 Royal Air Force*, p.242. The RNAS had similar system in place in 1916, Goulter p.22.

On passing this course the cadets were gazetted as 2nd Lieutenants and posted to a training squadron for elementary flying instruction, usually on Maurice Farman aircraft. When they were judged to be competent, usually after about four hours, they were sent on to the advanced training squadrons to fly service aircraft.⁵² During this period of advanced training they also completed an advanced gunnery course. Pilots were then qualified to receive their Flying Badge (wings) gazetted as Flying Officers (2/Lt) of the Royal Flying Corps.⁵³ Officers transferring from other regiments to the RFC, did the same course except for the Cadet Wing Training as they had already completed military training. Although the changes noted above, and the improvements to the training system, did improve the standard of pilot training, it was not until the introduction of the Smith-Barry system that the RFC could be confident that pilots would arrive on the operational squadrons proficient for the several roles required.

Major Robert Raymond Smith-Barry originally went to France with 5 Squadron in 1914, as a squadron pilot; he seems at that time to have been a somewhat eccentric character who did not take flying too seriously.⁵⁴ On 18th August 1914 he crashed in an RE8, his observer was killed and Smith-Barry was taken to hospital with two

⁵² Molkentin, *Centenary History*, p.53.

⁵³ Molkentin, *Centenary History*, p.54; *AP 125 The Royal Air Force*, p.242.

⁵⁴ G. Norris, *The Royal Flying Corps* (London, 1965), p.51.

broken legs and smashed knee caps. Although he was not expected to fly again, eventually, after several applications, he did get accepted on another flying course and returned to the front as Commanding Officer of 60 Squadron, in time for the start of the Battle of the Somme.⁵⁵ In common with other Squadron Commanding Officers at the front Smith-Barry became concerned by the lack of flying skills shown by replacement pilots. He believed that ill trained and incompetent pilots were no use to the squadrons and easy targets for German fighters. Unlike others however, he did not just accept the problem and send back for further training those who failed to meet the standard required; instead he analysed their failings and used his results to develop a training philosophy based on the use of an aeroplane with the appropriate handling qualities and with dual control. He also evolved a comprehensive syllabus, to be taught by experienced pilots who had been taught to teach.⁵⁶ Although such an approach today is self-evident, in 1916 it was a revolutionary approach and in order to obtain the necessary support for his ideas, Smith-Barry, writing officially as Officer Commanding of 60 Squadron, produced two papers one setting out a new pilot training scheme and a second suggesting the

⁵⁵ Jones, *TWITA Vol V* pp 429-435; Norris, pp.205-206.

⁵⁶ C.G. Jefford, *Observers and Navigators* (London, 2014), pp.88-90.

establishment of a training school for instructors.⁵⁷ When Trenchard, (who as we have seen, had also been concerned about the low standard of replacements) received the papers he consulted the officer commanding the home training organisation, Brigadier-General J Salmond, and quickly arranged for Smith-Barry to be sent home to test his theories as OC No 1 Reserve Squadron at Gosport⁵⁸

Until the Smith-Barry revolution, pilot's minds were full of strange ideas about how aeroplanes flew. For the student and often for the instructor, flight was unnatural and unbalanced and any deviation from the laid down procedures could bring disaster. Even experienced pilots whilst acquiring better skills did not always increase their understanding of the theory and practice of flying. Smith-Barry's approach was to encourage instructors and students to fly to the limits of the aircraft's capacity and thus build up knowledge and skill. He wrote:

The object has been not to prevent flyers from getting into difficulties of dangers, but to show them how to get out of them satisfactorily, and having done so, to make them go and repeat the process alone. If the pupil considers this dangerous let him find some other employment, as, whatever risk I ask him to run here, he will have to run a hundred times as much when he gets to France. How can a young officer be expected to do much in France, if, during the whole of his training in England he has been told of nothing but what is considered dangerous to do in flying? As most of the supposed dangers are not dangerous at all, but both easy and pleasant, it would seem a simple matter to be taught, chiefly by example, to be frightened of nothing connected with flying on this side of the lines' ⁵⁹

⁵⁷ Raleigh & Jones, *TWITA* Volume V pp.429-434; S F Wise, *The Official History of the Royal Canadian Air Force Volume One Canadian Airmen and the First World War* (Toronto, 1980) pp.104-105.

⁵⁸ *AP 125 The Royal Air Force*, pp.246-247.

⁵⁹ Raleigh & Jones, *TWITA* Volume V, pp.432-434.

The Smith-Barry philosophy of teaching was bolstered by the fact that by 1917 pilots had discovered the answer to the ‘spin’ which had been, because its cause and cure were unknown, of great concern to inexperienced pilots. By late 1916 several pilots had discovered that by pushing the control stick forward and applying opposite rudder, control could be recovered. This discovery enabled Smith-Barry to incorporate ‘spin recovery’ into his teaching with a consequent increase in credibility.⁶⁰ One of Smith-Barry’s instructors wrote:

The gospel he preached was that the aeroplane was a nice tempered, reasonable machine that always obeys a simple code of rules and in any weather. And by shedding a flood of light on the mysteries of its control he drove away the fear and real; danger that existed for those who were flying aeroplanes in the blackest ignorance of first principles’⁶¹

Smith-Barry’s other major development was to ensure that communication between pilots and instructors was always possible in an aircraft by means of what came to be called the ‘Gosport’ tube between pilot positions in two seat aircraft. Several other general improvements to pilot training were introduced in 1917; firstly, and

⁶⁰ Several pilots had discovered by ‘accident’ that spin recovery was possible, they include Major J E Chamier, Lt W Park RN, and Captain R Balcome-Brown, a New Zealander, who visited Smith-Barry to explain how he did it. Systematic investigation into spinning began in Summer of 1917, with experiments by F A Lindemann (later Lord Cherwell), who made a series of deliberate spins in a FB2a. The recovery technique was established: Full opposite Rudder, stick forward, recover from dive, was passed to flying schools. B J Brinkworth, ‘The early History of Spinning and Spin Research in the UK’ 1909-1929’ *Journal of Aeronautical History* (2014) 3, pp.106-110.

⁶¹ Raleigh & Jones, *TWITA* Volume V p.430.

most importantly a reasonably high-performance training aircraft (Avro 504) was produced with performance similar, to the aircraft which pilots would fly in France. Secondly, unlike the previous system of sending a pilot solo and then letting him get on with it, now instructors had to check pilots throughout their training to ensure bad habits were not developed. Thirdly, flight commanders were required to accept responsibility if a pilot under instruction crashed due to ignorance of a problem which should have been covered during his training. Perhaps even more radically, if a crash proved to be the result of pilot's fundamental lack of ability, the flight commander would have to explain why that pilot had not been removed from the course.

As early as February 1917, the War Office had been considering a re-structuring of the pilot training organisation and in July, impressed by the success of the Smith-Barry system, Major General Salmond directed that seven new 'all-through' training units (called Training Depot Stations) would be set up and provided with trained instructors, one aim being to remove the operational squadrons from the training system.⁶² The TDS proved to be a success and by the end of the War there were 72

⁶² *AP125 The Royal Air Force*, p.241.

TDSs in operation. By the end of 1917, the notional training programme for pilots was:

Cadet Wing	8-10 weeks
School of Aeronautics	6-7 weeks
Armament School	4 weeks
Training Depot (basic Avro 504)	12 weeks
Training Depot (advanced DH 9)	4-8 weeks
Fighting School	3 weeks
School of Navigation and Bomb Dropping	4-5 weeks ⁶³

At the end of the course the pilot would be awarded his flying badge. Pilots were graded as poor, fair, good very good or excellent, and given a report card, which was passed to the pilot's squadron. It was misleading information on these forms which caused many of the complaints about the ability of the pilot. For instance, Lt F A Garlick graduated in January 1916, his report card indicated that his cross-country flying was 'fair': in fact as he said in a sworn statement, he had never made *any* cross country flights.⁶⁴ Other discrepancies included crediting pilots with more hours than they had flown. It not surprising that these shortcomings would be discovered quickly by the Squadron Commander as it was common practice for replacement pilots to be checked as soon as they arrived.

⁶³ Table extracted from J Jefford 'The Training of Royal Air Force Pilots 1912-1918' *Royal Air force Historical Society Journal* Vol 70 (2018) pp.15-45 & p.34.

⁶⁴ *RAF Museum CC F A Garlick 20th February 1916*, Garlick and his Observer, Captain W Knox were killed in an air combat that day; Henshaw, *The Sky Their*, p.3.

Assuming no waiting time or leave, training would take about eleven months, the pupil having amassed between 60-70 hours flying. Although quality was much improved, (and there was never any shortage of volunteers) the extended training time was one of the reasons there was difficulty in finding replacements during the intensive operations in late 1917 and 1918. The formation of the Independent Force in June 1918 put further pressure on the training system.

The training regime for students in Canada matched the 1917 scheme in England but having been designed after the errors and changes of the first two years of war, the schools could design a coherent and effective system from the start.⁶⁵

After swearing in and a medical examination the candidate passed on the Cadet School for three weeks, where he was 'trained as a soldier'. The cadet then went on to a School of Military Aeronautics. Here he received instruction in engines, map reading, cross country flying and theory and of flight. He was also required to be able to read Morse code at twelve words a minute. On successful completion of the course the cadet then passed to a Training Squadron for initial flight training. An American naval volunteer wrote about the Canadian system, noting his first flight:

⁶⁵ Jones, *TWITA* Vol V pp.460-463.

after taking off and climbing well above the field the RFC pilots would make a few sharp banks, standing the ship first on one wing and then the other, then turn back to the aerodrome, coming in for a landing in a steep dive. It was almost over before we knew it had happened. I staggered away toward the hanger a little dizzy after my flight!⁶⁶

After five or six hours, solo flying, including thirty or forty landings, a successful student moves to a Higher Training Squadron for advanced training in cross country flying, wireless telegraphy, photography, bombing, artillery observing and aerial gunnery. After a minimum of thirty hours solo flying with this unit and again, if successful, finally he passes to a School of Gunnery and air fighting. Upon completion, he is commissioned as a 2nd Lieutenant and given his Flying Badge (wings) and sent overseas.⁶⁷

An interesting aspect of the Canadian training system was its combination of strict discipline contrasting with a lenient attitude towards failure. On the one hand cadets were disciplined for such minor faults as not standing to attention when speaking to an officer or not saluting properly, which entailed a loss of credits and sometimes involved receiving a penalty such as confinement. On the other hand, failure in examinations or tests was treated with leniency, allowing repeated chances to pass; so, that the failure rate at Canadian flight schools was only 4.9%, which was

⁶⁶ J. Sterling Halstead, 'Trained by the Royal Flying Corps' in *US Naval Institute Proceedings February 1917*, p.26.

⁶⁷ Wise, *Canadian Airmen*, pp.98.

in stark contrast to the rate in the World War Two Empire Air Training Scheme, where the wastage rate was 33 per cent.⁶⁸ Halstead, quoted above, also noted an attitude towards flying discipline at the flight school which may well have helped to encourage the attitudes sometimes shown by Canadian trained pilots flying in France:

There was always a shortage of aeroplanes owing to crashes which in many cases did not injure the pilot but always put the aeroplane out of use for minimum of several hours. This shortage was aggravated by the fact that after soloing, student pilots were allowed to wander all over eastern Canada and sometimes landed so far away from camp that it took several days to truck the aeroplane back.⁶⁹

Unfortunately, although the morale of pilots under instruction everywhere was improved because training methods were put on a logical and effective system, the accident rate in training remained high. It took some time for the 'Smith-Barry' system to be introduced in the many flying schools existing in 1917, including the CFS and the various schools of gunnery and air fighting and the training establishments in Egypt and Canada. It also took some time for a cadre of competent instructors to be recruited and sent to the schools. However, although there was some reduction in accidents, even the improvements in training methods could not eliminate the dangers inherent in operating the aeroplanes of the first real

⁶⁸ Wise, *Canadian Airmen*, p.107; S. Dunmore & W. Carter, *Reap The Whirlwind* (London, 1992) pp.43-45.

⁶⁹ Halstead, *Trained by the RFC*, p.27.

war in the air, nor the fact that in war some shortcuts would always be taken, and risks accepted.

Accidents and deaths in training were common in all training units and Australian pilots training in England had their share of fatalities.⁷⁰ During its fourteen months' period of training in Gloucestershire, the Australian Flying Corps buried 17 trainee pilots in Leighterton cemetery and a further seven elsewhere in England.⁷¹ Number 23 Training Wing had suffered 35 deaths a month before the introduction of the Smith-Barry method which was largely responsible for a reduction to about sixteen a month thereafter.⁷² Those students who had transferred from the trenches seemed most affected by the high accident rate. This seems to confirm the doubts of Major Birley about the incidence of breakdown by veteran volunteers⁷³. Australian pilot Lt Lewis wrote that he was 'a little afraid 'of flight training and another noted, '*seven crashes in three days, it's a disgrace no doctor is here.*'⁷⁴ The initially high morale of these trainees was affected by the losses in training accidents. Other writers have commented on the effect of the high accident rate in training, one referring to the 'constant haemorrhage of accidental death' and suggesting that the

⁷⁰ Australian pilots received their basic training in Australia, but all advanced training took place in England.

⁷¹ M. W. J. Molkentin *Culture, Class and Experience in The Australian Flying Corps* unpublished BA(Hons) Thesis (University of Wollongong, 2004) pp.33-35.

⁷² D. Winter, *The First of The Few*, p. 37-38.

⁷³ See above Chapter Two.

⁷⁴ Molkentin, *Culture, Class*, p.34.

fear of death in training was so pervasive that few memoirs mention its existence.⁷⁵

In fact several memoirs do address the frequency and results of training accidents.

Generally, they confirm the bad effects on morale of this wastage. Arthur Gould

Lee, (training before spin recovery was understood) writes:

Of course, nobody tried a spin for this would have been a suicidal act. Nobody knew how to get out of one and anyway, this was too reliable a way of being killed accidentally, which was of the unsettling things at Filton,.....Filton saw fatal crashes every few days, and usually through mysterious spins into the ground when taking off. Flat spins we called them, and they happened on BEs, sometimes right in front of our eyes as we lounged around the tarmac..... The instructors put these crashes down to sheer clumsy piloting, and so there it was, practically an act of God.⁷⁶

As late as June 1918, out of a total of 173 fatalities, 93 (54%) died while flying with training units.

By the end of 1917, the new instructional system had become effective and fatalities among students reduced from one every 790 flying hours to one every 1340 flying hours.⁷⁷ Nevertheless, the Australian Official History records that in 1918, some 20% of Australian pupils (all trained by the RFC) were killed in training, together with 16% of their instructors.⁷⁸

⁷⁵ D. Winter, *The First of the Few*, p. 36.

⁷⁶ A. Gould Lee, *Open Cockpit* (London, 1969, 2014), p.30.

⁷⁷ M. Molkenin, *Centenary History*, p.54.

⁷⁸ M Moltken, p.55.

In July 1917, in part because of German daylight raids on London, it was decided to increase the number of service squadrons to 106. This extra demand highlighted a serious shortfall in both pilots and observers. This was due to a combination of the high casualty rate, plus the time required to train pilots, added to a pilot's short period of effective service. After his eleven months' training the estimated effective operational period of a pilot on the Western Front was two and a half months for a scout (fighter) pilot, to four months for a pilot or observer in a reconnaissance, artillery, or Home Defence squadron.⁷⁹

During the discussions which took place before the decision to increase the number of service squadrons a departmental memorandum stated that the number of pilots under training in June 1917 was 5,841 and it would be eight months before they were available.⁸⁰ This number would in any cases be reduced by what was described as 'normal wastage' (killed, injured, sick, found unsuited for flying) and it was expected that 4,650 would actually qualify as pilots.⁸¹ Additionally, to meet the needs of the new squadrons some 3,252 pilots would be required by the end of 1917 and a further 2,199 from January to March 1918, a total of 5,451, shortfall of 801

⁷⁹ *AP 125 The Royal Air Force*, p.244.

⁸⁰ Jones, *TWITA* Vol V, pp.425-427.

⁸¹ Jones, *TWITA* Vol V, p.425.

pilots.⁸² To meet this deficiency additional training wings were formed in the UK and schools of Military Aeronautics were formed in Canada and Egypt.⁸³ It is worth noting that by July 1917, approximately 30% of RFC aircrew were Canadians, Australians or South Africans.⁸⁴

The pilot requirements of the RFC for the period July 1917. To December 1918 are set out in the table below:

PILOTS REQUIRED RFC 1917-1917⁸⁵

<i>To complete establishment of squadrons</i>	1917 <i>(July-Dec)</i>	1918 <i>(to 31st March)</i>	<i>(April-Dec)</i>
In France (to fill establishment)	460	400	1580
Home Defence	Nil	Nil	99
To replace wastage, France	2693	1749	9752
To replace wastage, Home Defence	99	50	216

Grand total of pilots required, 17,089. The requirement for April-December 1918 was overtaken by the ending of the war, but these figures illustrate the continuing high wastage rates up to the last days of fighting. Added to those aircrews killed in action, there were another 484 pilots and 178 observers killed in flying accidents

⁸² Raleigh & Jones, *TWITA* Vol V p.426.

⁸³ Wise, *Canadian Airmen* p.84; M. Mokentin, *Centenary History*, p.145.

⁸⁴ Wise, *Canadian Airmen* p. 448-449; Mokentin, *Centenary History*, p. 26.

⁸⁵ Table extracted from Jones, *TWITA* Vol V, p.427.

on the western front, which themselves should be added to the approximately 3,000 aircrew, killed in training accidents.⁸⁶

As Anderson points out the number of crashes he sees, or experiences influences the usually high initial morale of student pilots.⁸⁷ Similarly, the number of accidents on front line squadrons influenced aircrew, particularly those newly arrived. An additional aspect of flying accidents was the fact, that as errors of judgement were the most common cause of accidents it was often the case that being involved in even a minor accident affected a pilot's confidence and morale.

Observer Training

At the time the Air Battalion came into existence in 1911, the possibility of training officers of the General Staff as aerial observers was under consideration, but as the instruction was to have been in balloons and as none were available at that time, the scheme was abandoned.⁸⁸ However, although these tentative plans to train personnel in 'observing' had been discarded, it was demonstrated in the Army's 1913 manoeuvres that reconnaissance could be successfully conducted by aeroplanes,⁸⁹

⁸⁶ T. Henshaw, *The Sky Their Battlefield*, p.344.

⁸⁷ H.G.Anderson, *The Medical and Surgical Aspects of Aviation*, (London, 1919, 2010), pp.74-75.

⁸⁸ C. F. Snowden-Gamble, *The Air Weapon*, pp.128-129.

⁸⁹ H. ST. G. Saunders, *Per Ardua, The Rise of British Air Power 1911-1939* (London, 1944), pp. 24-26; *AP125 The Royal Air Force*, p.15.

The concept of an ‘observer’ as a separate crew member had been accepted by the then commander of the RFC’s Military Wing (Lt Col F H Sykes) when, in February 1913, he produced a Training Manual for the corps. He wrote:

In order that the best results may be obtained from aerial reconnaissance, it is essential that the same pilot and observer should always work together as far as possible, at all events in the case of aeroplanes. Mutual confidence is of the utmost importance.

It is inadvisable to lay down hard and fast rules as to the respective duties of pilots and observers, as it must depend largely upon the personality of the individuals. As soon as the orders have been received, the pilot and observer should consult together with the aid of a map as to the best manner of carrying out their task and the route to be followed.⁹⁰

However, nothing was said as to who these observers would be and where they would be found. In fact, in the 1913 ‘war games’, apart from three students from the current staff college course, all the officers who flew as observers were pilots. One of those pilots, who flew as both pilot and observer during the manoeuvres felt pilots should not undertake the role of observers. He said:

pilots made poor observers as they disliked flying as passengers and tended to become preoccupied with monitoring the efforts of the man driving the aeroplane.

The ideal observer would be an experienced ground-based officer, preferably possessing some technical skill which might be of value in the event of mechanical failure.⁹¹

⁹⁰ WO 2483 Training Manual, Royal Flying Corps Part II (1915); Jefford, *Observers and Navigators* p. 2; E. Ash *Sir Frederick Sykes and the Air Revolution 1912-1918* (London, 1999) pp.42-44. Sykes referred to this training plan in *Aviation in Peace And War* (London, 1922) the published version of his Leese-Knoke lectures at Cambridge University in February/march 1921.

⁹¹ M. I. Shepard, ‘Extracts from Memoirs of Gordon Shepard (1924’) in *Cross and Cockade* Vol 8 No 1 (1977).

By 1914, the War Office realising the need for specialized observers decided to set up a course to ensure that trained observers would be available in case of war. Accordingly, ten officers were posted to Netheravon for a month's instruction. An important factor in this initiative was that on completion of the course the 'trained' observer would be able to draw flying pay at 5 shillings per day. (a pilot received 8 shillings a day). In the event with an imminent threat of war, the course was terminated on 3rd August and all officers instructed to return to their units.

These decisions left the RFC not only without trained observers, but with no certain source of replacements for the inevitable 'wastage' on operations. In the event, recruitment was mostly from volunteer infantry and gunnery officers already serving with their regiments. (opportunities to transfer to the RFC were advertised). Some officers used this chance as a way of getting away from the trenches, although at least one man who transferred thought that being 'shelled' (anti-aircraft fire) in the air was just as bad and more personal.⁹²

⁹² R.Barker, *The Royal Flying Corps in World War I*, p.353, quoting Captain Leslie Horridge .

Notwithstanding the influx of (untrained) volunteers, some directly from the trenches, the shortage of observers meant that pilots had to be used instead. This included earmarking several the pilots sent out to France as replacement pilots as observers, some of whom had already been noted as ‘indifferent pilots’, who may be useful as observers.⁹³ However, if an inexperienced pilot did become a combatant observer, whilst serving in that role he was unavailable as a pilot. Additionally, it was clearly uneconomic to risk losing two pilots with each aircraft loss. In any event, by early 1915 it was clear that these makeshift arrangements would no longer meet the increasing demand of the operational squadrons. Accordingly, and after some rethinking HQ RFC (Lt Col Sykes) recommended to GHQ there should be, on each squadron:

- a) Eight highly trained observers attached permanently to the squadron.
- b) Two further observers undergoing training.
- c) A further group who when fully trained would return to parent units but be available for recall as a reserve for the RFC.

This proposal was accepted, but this left open the question as to how these observers would be trained.⁹⁴

⁹³ Jefford, *Observers & Navigators*, p.7.

⁹⁴ *AP 125 The Royal Air Force* p.74.

Initially, it was accepted that observers would learn their work in the field, that is flying with a squadron on operations. What this ‘on the job’ training meant is described by some of those involved. R R Money had volunteered to serve as an observer because the waiting list to become a pilot was too long. He received a three-week introduction to signalling and reconnaissance and was then posted to No 12 Squadron in France. He wrote:

I went for my first trip over the lines with Spratt (his flight commander). We were to do a reconnaissance from the Ypres Salient’ via Lille, to Lens. It took me all my time to recognise Ypres, but when Archie began to burst round us, I gathered that we had crossed the lines. I did not at first realise that the bursts of Archie were aimed at us, and even when they got nearer it seemed much more interesting than dangerous, I was pleased when we got to Lille.....where I could see signs of life. I counted up the rolling-stock in the railway sidings, and of lorry and car traffic.⁹⁵

Another example of the results of this ad-hoc training system was 2/Lt FA Portal who had been in France since the start of the war as a Motor Cyclist Officer, who reported to No 3 Squadron on 5th July 1915:

I had never been in an aeroplane before, nor had I seen a Lewis gun. I knew the Morse Code well and was fairly competent to read a map and find my way round on the ground. I had only the vaguest idea what my new duties would be, I had seen aeroplanes signalling with coloured lights and lamps to the artillery and I had seen a Morane blown up on the ground by the bombs it was going to drop on the lines. I had a vague idea of the uses of reconnaissance.⁹⁶

⁹⁵ R. R. Money, *Flying and Soldiering*, (London, 1936), pp.23-24.

⁹⁶ D. Richards, *Portal of Hungerford; The Life of Marshal of the Royal Air Force Viscount Portal of Hungerford* (London, 1977), pp.41-42.

Adding to Portal's difficulties was the fact that when introduced to Captain Hubbard, who was to be his pilot, Hubbard told Portal that he had never flown over the lines. Obviously, this was an unsatisfactory and for inexperienced aircrew, a dangerous system.

But by the time of Portal's flight in July 1915, it was becoming clear that some specific core skills and knowledge was required by observers for them to be accepted as qualified for operational flying. This was recognised by HQ RFC, and in August 1915, the qualifications for an officer to be graded as a trained observer were laid down by GOC RFC as:

1. Thorough knowledge of the Lewis gun
2. Skilled in the use of the RFC camera
3. Sending and receiving by wireless at a rate of six words a minute with 98% accuracy
4. Thorough knowledge of method of co-operation between aeroplane and artillery
5. Has carried out two reconnaissance or flights or has ranged batteries successfully on two occasions.⁹⁷

The acceptance of the vital role observers played in the work of the RFC, recognised by these requirements, did not entirely overcome the feeling in parts of the RFC

⁹⁷ *AP 125 The Royal Air Force* p.74.

(including some pilots), that observers were in some way less important. Money in his memoirs sets out the position as it was in 1915:

Observers were of no account in those days--indeed, I do not think that they have ever attained to a measure of their pilots except in the Fleet Air Arm. This was not the official view, of course—merely the more important social one. Observers were ballast, useless heavy impediments, ullage who must be sat upon and squashed..... as practically every observer booked forward with longing to the day when he would himself become a pilot, this attitude seemed quite natural to him.”⁹⁸

However, on 23rd August 1915, the proper status of observers was at last recognised by the introduction of a flying badge, the observer’s ‘wings’ or to be accurate ‘half wing’. This was rightly recognised as a huge step towards equality with pilots.⁹⁹

Trenchard was not happy, in December 1916 writing from France he said that too much time was spent by squadrons teaching newly joined observers and that because many had come directly from the trenches without taking leave they were not in a condition to take up the physically demanding role of operational aircrew. He proposed that all probationary observers joining the RFC in the field should be sent home for a one-month course and then sent back to France. This proposal was accepted and from 1st January 1917 probationary observers were sent to a School for

⁹⁸ Money, *Flying and Soldiering*, p.13.

⁹⁹ It is right to note here that ‘equality’ with pilots for ‘rear’ crew members was not achieved until the ‘cold war’ in the 1960s, particularly with respect to command and staff appointments.

Military Aeronautics, to be taught, artillery work, wireless, machine guns, photography, and map reading.¹⁰⁰

There was a question as to whether NCOs who had already been flying as observers should receive the flying badge. This was raised when Sgt Major F C Lewis, who had been flying since 1912, applied to wear the wing and after some discussion and delay, his application was approved. Shortly afterwards it was suggested that all personal who had been flying on photographic duties should be considered qualified. The Director of Military Aeronautics ruled that the only personal entitled to wear observers 'wings' were those considered to be fully qualified and fully employed on 'artillery work or reconnaissance or machine gunnery' (by mid-1916 this included NCO gunners) and that any of these would be able to operate a camera.¹⁰¹

The training arrangements started in 1915 did not include any training in wireless and therefore from early 1916 observer trainees were sent to an observer's section at the Wireless School at Brooklands.¹⁰²

¹⁰⁰ Jones, *TWITA* Vol V pp.435-436.

¹⁰¹ Jefford, *Observers & Navigators*, p.19.

¹⁰² *AP 125 The Royal Air Force*, p.155.

Despite these enhancements of the observer's status, officers were not coming forward in enough numbers to meet the demands of the squadrons, one reason being that even if an observer had completed all necessary courses of instruction it was not until he had carried out several operational sorties could he receive his observers' badge. Pilots on the other hand were awarded their flying badges as soon as flying training was completed and kept them even if they had to be returned from the front for further training. It was even more difficult for an observer posted to a Home Defence squadron to qualify as operations against Zeppelins, even though they entailed dangerous night flying, did not come within the definition of 'operational sortie'.

Another serious disincentive to volunteering for observer duties was the lack of promotion above the rank of lieutenant. The only opportunity for aircrew to be appointed Captain (and later Major) was to be a squadron flight commander, who were all pilots. This was one of the reasons that many observers volunteered for pilot training if they could, thus further exacerbating the shortage of observers. And of course, as already noted, pilots received eight shillings a day flying pay and observers five.¹⁰³

¹⁰³ Jefford, *Observers & Navigators*, pp. 57-59.

Early in 1917 the quality of observers and their training arrangements became a matter of concern to Trenchard, partly because on regular visits to front line squadrons, he had become aware of squadron commanders concern about inadequate observer training.¹⁰⁴ On one visit Trenchard discovered that an observer had been with the squadron as a probationer observer for ten weeks as had not accumulated enough operational hours to qualify. Trenchard then discovered that this was not an isolated case, one outcome being that although many squadrons had an ample number of unqualified observers, they did not have their *establishment* of twelve qualified observers. A further indication that all was not well with observers training arrangements came from the Mediterranean Expeditionary Force, whose squadrons were so critical of the low professionalism of observers sent to it that MEF had initiated its own training programme.¹⁰⁵

By early 1917 the aircraft flown by the RFC had improved considerably from the underpowered and inadequately armed aircraft used in 1915-1916. The newer aircraft had been designed incorporating combat experience and the specialised requirements of photography, artillery spotting and contact patrols. One result of different aircraft being used for specific tasks was that there was an increasing

¹⁰⁴ M. Baring, *Flying Corps Headquarters 1914-1918*, (London, 1920, 1985), pp.203-206.

¹⁰⁵ Y Sheffy, *British Military Intelligence in the Palestine Campaign 1914-1918*, (London, 1998), pp.187-188.

demand for specialised role-related training. This had already been recognised by Trenchard, who in February 1917 suggested that the role of ‘aerial gunner’ was formally identified and in July any gunner who had passed the Hythe course and flown eight operations overseas was granted an observers badge.¹⁰⁶ Additionally, observers were to be categorised as corps observers, for those employed on reconnaissance squadrons or army observers, for those on fighter or bomber squadrons.¹⁰⁷

Because of the different roles required, the training system had already begun to act. Of the 37 observers produced by the Schools of Military Aeronautics at Oxford and Reading each week, ten were to be sent to Hythe to become Army observers, while the other twenty-seven went to Brooklands Wireless and observers’ school to become Corps observers.

As noted above, to ensure a continuous flow of observers to the squadrons it had been the practice to accept volunteers from the trenches who (in spite of Trenchard’s direction) were not usually given leave before posting to a squadron, it had been found that they were often not in a fit condition to take up the role of

¹⁰⁶ The requirement that operations ‘overseas’ were needed to qualify meant that observers employed on the Home Defence Squadrons could not qualify, and it was necessary to exchange some observers with qualified combat aircrew who already had been awarded their badge.

¹⁰⁷ Jefford, *Observers & Navigators*, p. 63.

observer which demanded absolute mental and physical fitness. This unsatisfactory situation was finally addressed in late 1917 when Trenchard realising that squadrons wasted much time training these men, decided that all officers who joined the RFC in the field would be returned to the Home Establishment for a formal course before being employed as observers.¹⁰⁸

By 1917 the RFC had expanded to some 106 operational squadrons and 97 reserve or training squadrons. The expansion of the RFC with the continuing heavy demand for aircrew was responsible for the last major change in the training system, when, apart from the utilisation of the Schools in Canada and Egypt, the Training Brigade (Major General J M Salmond) was decentralised into three Group Commands (Northern, London and Southern) responsible for all aircrew training in their defined area.¹⁰⁹

As already noted, realistic and effective training undoubtedly has a positive effect upon morale. Pilots and Observers entering the RFC were mostly young volunteers attracted to flying as part of the public enthusiasm for this new exiting aerial activity, which in 1914 was only a decade old. When the call came in 1914 it was natural that many would chose this option to serve.¹¹⁰ In the early years of the war pilot

¹⁰⁸ Jones, *TWITA* Vol V p.435.

¹⁰⁹ Jones *TWITA* Vol V p.425.

¹¹⁰ C. Lewis, *Sagittarius Rising* (London, 1936,1994), pp.7-9.

training was neither effective or safe with an accident rate which undoubtedly affected morale¹¹¹ However, by 1917 in part due to the introduction of the Smith-Barry system, both the effectiveness of training and the accident rate improved, although it was still high both in training and on operational squadrons.

Apart from the wastage caused by death and injury, accidents in training were also at least part of the reason that a significant number of pilots were withdrawn from flying for psychological or nervous reasons. A study of 600 pilots in training by O H Gotch, (Physician to RAF in the First World War) found that about 10% gave up or were asked to withdraw suffering from neurosis, Apart from those who found out for themselves, or were identified by instructors to be temperamentally unsuited for flying, a significant number were affected, psychologically either from being involved in one or more accidents, or in few cases after seeing an accident (usually a serious one)¹¹²

On the other hand, observers, whose morale also suffered from the horrendous accident rate in training, were subjected to several additional factors which affected their attitude. Unlike pilots, observers were not presented with their wings upon completion of training but had to serve on an operational squadron before they were

¹¹¹ Molkenstin *Centenary History*, pp.53-59.

¹¹² O H Gotch, 'The Aero-Neurosis of Flying Pupils', H G Anderson, M Flack, O H Gotch, (eds.) *The Medical and Aviation Surgical Aspects of Aviation*, (London, 1919), pp.103-115.

presented. Pilots received eight shillings a day flying pay, observers five. Observers were subject to restrictions on rank and promotion, which meant that observers were barred from any command role in the RFC, and of course there was always the fact that if involved in aircraft accidents they were not in control of their own destiny. These factors may well have been a major reason why many (perhaps most) observers applied for pilot training as soon as possible.

This chapter has demonstrated the vital importance of training, both in instilling and sustaining morale and effectiveness. It has also shown that the lack of an effective method and competent instructors in the first three years of the war was responsible for low training standards. Accidents in training was a serious problem throughout the war, and as noted in chapter four some 10% of pilot candidates failed training courses for psychological reasons.

By 1918 pilot training had evolved into an effective system largely due to the Smith-Barry methods of instruction, which revolutionised pilot training. But within months of the benefit of this arriving at the front, the heavy casualties in late 1917 into 1918, caused training times to be cut and replacements to be sent to France with inadequate training. The shortfall in training times made it even more difficult for pilots to master combat flying, and exacerbated the natural anxiety felt when expecting combat. As is shown in later chapters, many inexperienced aircrew

suffered from flying sickness and were removed from flying. It is arguable that inadequate training was in many cases at least partly responsible. A further effect of untrained aircrew arriving at the front was a drop in the morale of squadrons, as in Nos 99 and 55 during the Independent Force's bombing campaign in 1918. (see chapter seven).

Chapter Four

Combat Stress and Aircrew

Many writers have examined the causes, effect and treatment of Shell Shock suffered by thousands of men fighting in the trenches in the First World War. Part of that examination has addressed the question of whether each major war produces its own conflict and post-conflict disorders are defined by symptoms related to current military and medical technology, or whether such disorders are essentially the same. This thesis examines one aspect of that debate, which has not been adequately addressed, that of psychological disorders suffered by First World War aircrew. The incidence of such disorders will be established, and comparison made with aircrew of the Second World War.

This chapter examines the causes and conditions leading to the diagnosis of 'Flying Sickness' used in the First World War when removing aircrew from flying duties because of a psychological or psychiatric response to combat stress. Additionally, it analyses the medical treatment of aircrew suffering from Neurosis in this period.

History of War Neurosis

A psychological reaction to combat by soldiers has been recognised as a disabling condition from at least the seventeenth century and has been known by many

names.¹ In Wellington's Army during the Peninsular war, 'war weariness' and reluctance to fight was given the name 'melancholia' or 'nostalgia', perhaps referring to the symptoms of homesickness and sometimes despair shown by soldiers during these wars which was most noticeable among inexperienced troops.² In the Napoleonic wars there were cases of 'wind contusions' giving symptoms of tingling, twitching and sometimes paralysis: for which Napoleon's chief surgeon prescribed exercise and music.³

In the American Civil War, symptoms such as breathlessness, palpitations, fatigue and nervousness were identified as 'soldier's heart' by Dr Jacob M Da Costa who gave an account of this condition ('Disordered action of the heart' (DAH) also known as 'effort syndrome') among combatants in the Civil War.⁴ Civil war soldiers with these symptoms, which included palpitations, high blood pressure, dizziness, headaches and fatigue were treated at a military hospital in Philadelphia for 'neurasthenia' and 'irritable heart'.⁵

In Britain, following service in the Crimean War, many soldiers were recorded as suffering from 'chronic fatigue syndrome' also called 'neurasthenia', symptoms of which included exhaustion, weakness, tremors, and visual difficulties. Some of the soldiers affected had previously served in India where the severe conditions

¹ A Stokes & K Kite, *Flight Stress, Fatigue and Performance in Aviation* (Aldershot, 1994) pp.213-215.

² E. Jones, 'Historical Approaches to post combat disorders', *Philosophical Transitions; Biological Sciences* Volume 361 No 1486 (2006) pp.533-542 & p.535.

³ M F Poster, 'Thoughts on war trauma and the need for diplomacy', *International Forum of Psychoanalysis* Volume 23 No 1 (2014) pp.55-63 & p.57.

⁴ O. Paul, 'Da Costa's Syndrome or Neurocirculatory Asthenia', *British Heart Journal* Vol 58 1987, pp.306-315; P Wood, 'Aetiology of Da Costa's Syndrome' *The British Medical Journal* 7 June 1941, pp.845-851.

⁵ M.F.Poster, 'Thoughts on war, pp. 57-58.

of service, including the impact of heat stroke were said to contribute to their disability.⁶ The difficulty of diagnosing medical conditions presented by these unexplained and sometimes vague symptoms is highlighted by the clinical histories outlined by Jones & Wessley in their study of 4000 pensions files (mostly from the Boer War). This difficulty is highlighted by the case of a Sergeant Dawes, who served six months in the Crimea before being posted to India, where he remained for six and a half years. He returned to the United Kingdom in 1864, suffering from fatigue: weakness, tremors, imperfect vision and pains in arms and legs. Although these symptoms could mimic those of DAH, when examined he was found to have no abnormalities of the heart. His record showed that he was not a malingerer. Jones and Wessely point out that if Dawes had presented in 1915, he may have been classified with DAH and in 1973, the diagnosis would be 'Post Traumatic Stress Disorder'.⁷

In the years, immediately following the Crimean War there was considerable concern in the British Army about the number of discharges because of 'diseases of the circularity system', 'De Costas Syndrome, neurocirculatory asthenia and 'DAH'.⁸

⁶ E. Jones & S. Wessely 'Cases of Chronic Fatigue Syndrome After Crimean War and Indian Mutiny' *British Medical Journal* 1 Vol 319 7225 (1999), p.1645.

⁷ E Jones & S Wessley, p.1645. Following the Blackman Case, it is likely that the diagnosis would now be 'adjustment disorder' *R v Blackman* {2017} EWCA Crim 190 Court Martial Appeal Court 7 -8 Feb 2017 judgement pp 70-7.

⁸ E. Jones, 'Historical approaches to post-combat disorders' in *Transactions of The Royal Society B* (2006) pp.535-561 & p.535.

Many of these breakdowns took place not during war service, but during training or because of previous service in India or the Crimea. In 1867 an investigation carried out by Dr Maclean, Professor of Military Medicine at the Army Medical School on 5000 soldiers who had served abroad between 1863 and 1866 found that 8% had been invalided from the service with what appeared to be heart disease. Additionally, he estimated that soldiers serving in the UK had a 15% discharge rate due to heart disease, which he attributed to the webbing supporting the soldiers backpack constricting the blood vessels supplying the heart.⁹ In 1865 following an investigation by a War Office Committee the War Office recommended a redesign of the backpack and straps, but in 1876, when despite the new designs cases of DAH continued, it was now attributed to faulty equipment and the effects of serving in inhospitable climates. The symptoms were not at that time considered to be a result of psychological stress.¹⁰

However, during the South African and Boer Wars, DAH was a major cause of hospitalization with some 3631 soldiers affected. Of those, 40% were sent home to UK. It was noticed that once a soldier had suffered DAH, going into action again caused a recurrence of the symptoms.¹¹ Despite these figures and the seemingly obvious evidence that the condition was combat related, there was still a reluctance to attribute the symptoms to the effect of combat. This was at least

⁹ Jones, *Historical Approaches*, p. 536.

¹⁰ E. Jones & E Palmer, 'War pensions (1900-1945); changing models of psychological understanding', *British Journal of Psychiatry* Vol 180 2002, pp.274-275.

¹¹ Jones, *Historical Approaches*, p.536.

partly due to the fact because sufferers were moved from the front and symptoms could easily be fabricated, there was always the possibility of malingering.

In the First World War DAH continued to be diagnosed in the British Army although it was sometimes included under the wider term 'nervous disorder' or as Da Costa's syndrome. During and after the retreat from Mons in 1914, which involved rapid marching for several days with no sleep, there were many cases of chest pains, shortness of breath and heart palpitations. Many of these soldiers were diagnosed as DAH/ Da Costa's syndrome and by 1918 some 35,000 soldiers and sailors had been discharged for heart disorders in most cases without any physical or organic cause being found.¹² Dr Paul Wood after investigating some 200 military cases and a survey of previous work on the subject of Da Costa's syndrome concluded that the evidence showed that:

The symptoms and signs of Da Costa's syndrome more closely resemble those of emotion especially fear than those of effort in the normal subject.¹³

Early in the First World War soldiers of the British Expeditionary Force (BEF) in France were arriving traumatized at medical centres and presenting medical officers with difficulties in understanding and treating their condition. Because several of the early casualties had experienced shelling and suffered concussion, Major Charles Myers, consultant to the BEF, inappropriately called the condition 'Shell Shock'.¹⁴ Some doctors assessing cases in the context of trench warfare,

¹² B. Shephard, *A War of Soldiers and Psychiatrists 1914-1994* (London, 2002), pp.65-67; Paul Wood, 'Da Costa's Syndrome' (ref 4 above) at p.312 gives a figure of 41,699 soldiers discharged by 1918.

¹³ P Wood, 'Da Costa's Syndrome (or effort syndrome)' *British Medical Journal* Volume 2 (1941) pp.767-72, pp.805-51, pp.845-851, in particular summary at p.850.

¹⁴ C S Meyers, *Shell Shock in France 1914-1918* (London, 1940) pp.25-26

produced a psychological interpretation of the soldier's condition. Captain Harold Wiltshire, No. 12 General Hospital Rouen noted:

Gradual psychic exhaustion from continued fear is an important disposing cause of shell shock, particularly in men of neuropathic disposition. In such subjects it may suffice to cause shell shock per se.....In the vast majority of cases of shell shock, the exciting cause is some special psychic shock. Horrible sights are the most frequent and potent factor in the production this shock. Losses and the fright of being buried are also important in this respect.¹⁵

However, this basic underlying cause of these disorders, all arising from the stress of battle, was not identified and fully accepted until many studies of combat stress/battle exhaustion in and after World War Two established that the conflict between fear and duty was the catalectic factor, and it is generally accepted that the higher the killed and wounded rate, and thus lower chance of survival, the greater risk of combat related psychological breakdown.¹⁶

In 1943 C F Symonds an RAF psychiatrist after extensive case studies of aircrew breakdown concluded that that the most important element of flying stress is exposure to danger. He recommended that in the prevention of neurosis in aircrew serious consideration should be given to the subject of fear; noting that fear within limits is not only a natural emotion, sharpening attention and evoking maximal effort.¹⁷ However, fear, useful in 'lessor degrees' becomes harmful as soon as it exceeds a certain limit. Similarly, Doctor D Reid, Former Royal Air

¹⁵ H Wiltshire, *Lancet* 1 (1916) p.1212.

¹⁶ E Jones & S Wessely, 'Psychiatric Battle Casualties: an intra inter-war comparison' *British Journal of Psychiatry* Volume 178 (2001) pp.243-245; P Wagner, 'Psychiatric activities during the Normandy Offensive June 20th to August 20th 1944', *Psychiatry*, Volume 9, pp.348 -356.

¹⁷ C P Symonds, 'The Human response To Flying Stress' *British Medical Journal* Volume 2 No 4327, (1943), pp.740-744.

Force Director-General of Medical Services, concluded in a 1948 study that ‘anxiety’ had serious effects on the performance of aircrew, the anxiety increasing with the length of time over enemy territory.¹⁸ In their clinical study of neurosis brought on by flying duties Symonds and Wilson explained the psychiatrist’s approach to aircrew anxiety:

These men are obviously suffering from a state of fear, the difficult question to decide is whether their fear is exaggerated or unjustified or within normal limits... Undue persistence of fear reactions after danger has passed, and recurrence with inadequate stimulus were considered evidence of a pathological state. We believe that in fact there is no stable line of distinction between anxiety neurosis and normal emotional reaction, but that in the interests of morale, a line must always be drawn.¹⁹

They also pointed out, as had the War Office Committee of Enquiry into shell shock, that whether the ‘persistent fear reaction’ is neurosis, depends upon whether the man has tried hard enough to satisfy group standards.

These studies clearly identify the psychological basis of the symptoms of combat stress: the conflict between duty and survival, together with the cumulative effect of fear, arising in large part due to the individual’s knowledge that the longer he stays in the battle the less chance he will survive.²⁰

Psychological Disorders in the RFC/RAF

Almost from the start of the First World War, it became apparent that flying personnel could show inefficiency or loss of confidence in the air without

¹⁸ D D Reid, ‘Sickness and Stress in Operational flying’ *British Journal of Social Medicine* Volume 2 No 4 (1948) pp.121-131.

¹⁹ C P Symonds & D J Williams, ‘Clinical And Statistical Study Of Neurosis Precipitated By Flying Duties’ *Reports from Flying Personnel Research Committee 1939-1948 Report 547 August 1943*, p.34.

²⁰ R R Grinkler & J P Spiegel, *Men Under Stress* (New York, 1945), p.32.

evidence of any known physical disease to account for the condition.²¹ The problem of aircrew wastage, both in training and operations, from this cause became serious enough for investigation into the nature and causes of this condition. Lieutenant Colonel M Flack (afterwards Director of Medical Research to the Royal Air Force) devised 'Tests for Flying Efficiency and Flying strain'. He reported that although psychological factors might be evident, they were considered only in so far as they might have caused or contributed to a state of nervous exhaustion, other factors being effects of altitude and physical fatigue. All these factors taken together were summed up as 'flying strain'. Thus Flack reported cases both as 'broken down through flying stress' and 'flying stress has markedly supervened'. A report by Major J L Birley RAMC, (medical adviser to C-in-C France) 'Temperament and Service Flying' indicated that and the term 'temperamental unfitness' was already in use to describe both those who lost confidence without any crash or unpleasant experience and those who became inefficient or lost confidence after such an experience or after a long period of operational flying.²² Birley felt that temperamental and physical unfitness were closely allied and that in the temperamentally unfit the failure was largely due to an undue susceptibility to mental shock. Both Birley and Flack were looking at the causes of flying stress and its effects upon the aviator.

²¹ AP 3139 *Psychological Disorders in Flying Personnel of the Royal Air Force investigated 1939-1945*. (HMSO, 1947) Chap II. p.18.

²² J L Birley, 'Temperament and Service Flying' *Medical Research Council Medical Problems of Flying* (HMSO, 1920) paper No 8, (1917) pp.142-144.

Unfortunately, the distinction between cause and effect was ignored and the use of the term ‘flying stress’ to describe the load which the aviator had to bear was also used to describe the state of ill-health which resulted when the load became too heavy. Flying stress, in fact became a clinical diagnosis.²³

Several other terms were used in the early days of flying and air warfare to describe the effects on aircrew of operating in the sky. Anderson used the terms ‘aviation neurasthenia’ and later ‘aero-neurosis’ to describe any type of functional disorder brought on by flying.²⁴ It was not hard for the medical profession to accept that the new and dramatic occupation of flying would cause previously unknown conditions. This was not only because the occupation itself was so new, but it was also the case that the effects of anoxia and cold in the air were unknown. In fact, Flack (a pioneer in aviation medicine) felt that lack of oxygen itself caused nervousness, insomnia, lack of confidence and reluctance to fly.²⁵ On the other hand Birley, relying on his experience in the field, felt that ‘flying fatigue’ was the problem and arranged that all cases of ‘flying fatigue’ should be sent to 24th General Hospital for rest and treatment.²⁶ In fact as early as summer 1916, RFC medical records show that the diagnosis ‘Flying Sickness’ or ‘Neurasthenia’ was used to classify admissions for aircrew showing psychiatric symptoms.²⁷

²³ C. P. Symonds (AVM Sir) ‘The Human Response to Flying Stress’ *British Medical Journal*, 5 Dec 1943 p.4326.

²⁴ H. G. Anderson, *The Medical and Surgical Aspects of Aviation* (London, 1919) Chap V p.96 onwards.

²⁵ Anderson, Chapter IV (written by LT Col M B Flack) p.41.

²⁶ D. H. Robinson, *The Dangerous Sky A History of Aviation Medicine*, (Henley-on-Thames, 1973), p.101.

²⁷ *RAF Museum-Vault – Casualty Cards*.

It is clear that all the terms used during the First World War to describe the physical and psychological symptoms suffered by aircrew, are misleading, and as Symonds (writing in 1942) pointed out there is no more reason to use 'flying stress', 'aeroneurosis' or 'aviator's neurasthenia' as a diagnosis than there was 'shell shock'. Symonds also made the point that these terms are founded on error and might well, as 'shell shock' did, become a danger to morale.²⁸

In a further article he noted the tendency to invent new terms for neurosis in flying personnel, which he attributed to the desire for executive officers to avoid classifying aircrew, who may have given of their best, as neurotic.²⁹ He points out that by 1942, the classification of all mental disorder in terms of reaction types allows psychiatrists to give a name to any psychological disorder of the kind which might be included under flying stress, areo-neurosis, neurasthenia, or even 'shell-shock.'³⁰

Accordingly, in the Second World War, the RAF used the following classifications to identify psychological disorder in aircrew; Anxiety, Depression. Elation. Fatigue Syndrome. Hysteria, Obsessional Schizophrenia, Organic acute and Organic Chronic. This classification of mental disorder allowed for effective diagnosis without the use of the term neurotic.

In this work to ensure conciseness and clarity the term 'combat stress' is used to describe the strain or stress which aircrew flying in a training or war

²⁸ Symonds *The Human Response to Flying Stress* p.4326.

²⁹ C.P. Symonds, *Use and Abuse of The Term 'Flying Stress'* *AP 3139 Psychological Disorders in Flying Personnel Of The Royal Air Force* (HMSO,1947) Chapter Two, p.18.

³⁰ Symonds *AP 3139* Chapter Two p.20.

environment experience: that is the load which aircrews must carry. Combat stress is what happens *to* a man. The psychological result of that stress is what happens *in* him: in this study the ‘war neurosis’ arising from operational or training flying will generally be described as ‘flying sickness’ (the term adopted by the RFC) accepting the fact that a modern clinical diagnosis would probably come under one of the *classifications* set out above.

Although the Army Medical Authorities had had considerable experience of war neurosis/DAH and/or Da Costa’s Syndrome before the outbreak of war in 1914, the British Army had no policy or organisation in 1914 to deal with any of these conditions.

As Dr (Captain RAMC) W H R Rivers, who during the war was appointed consultant to the RFC and treated many Pilots and Observers who suffered breakdown, pointed out:

the medical administration of our own and other armies was wholly unprepared for the vast extent and varied forms in which modern warfare is able to upset the higher functions of the nervous system and the mental activity of those called upon to take part in it. Moreover, before the war, the psycho-neuroses had interested few practitioners of medicine. Common as these disorders are in civil life, there are left almost without notice in medical education, while those who had paid special attention to the subject were torn asunder by fierce differences of opinion, not only concerning the nature of these disturbances of nervous and mental function, but also in regard to the practical measures by which they may be treated or prevented. The outbreak of the war found the medical profession with no such common body of principles and measures as those which enabled Medicine and Surgery to deal so successfully with the more material effects of warfare on the human organism.

A succinct confirmation of River’s statement is provided by the Official Australian Medical History which states:

The whole history of medical and military practice and policy in the matter of mental disorder on the Western Front reads indeed like the Battle of the Cards in Alice in Wonderland'³¹

The British authorities were aware early in the war that the many cases of psychoneurosis in the French Army had resulted in medical responses, including the sending of experts to investigate the problem and the setting up of forward reception units to deal with war neurosis. In fact, it was French neurologists and psychiatrists who were among the first to fully and accurately describe the psycho-neurosis of war.³² In spite of this knowledge it was not until August 1915 that the British Expeditionary Force (BEF) appointed a Consulting Psychologist and a Consulting Neurologist.³³ The problem of 'wastage' of manpower due to cases of 'nervous disorders' did not become serious until July 1916, when during the first battle of the Somme several thousand soldiers had to be evacuated, many of whom were sent back to England.³⁴ Although the Army authorities understood from the experience of previous wars that not all wounds suffered in war were to the body, they were now faced with a bewildering set of symptoms both physical and psychological. There was an initial reluctance to recognise or to accept the psychological aspects of these cases partly because of a concern about malingering but also, there was considerable concern about the

³¹ Butler, A. G., *Official History of the Australian Army, Medical Services 1914-1918 (AWM 1943)* Vol III Chap II p. 4.

³² Macpherson, Maj-Gen, Sir, W. G., *History of The Great War, Medical Services, Diseases of the War* (HMSO, 1923) Vol II Chap 1, pp 8-9.

³³ R. A. Ahrenfeldt, *Psychiatry in The British Army In The Second World War*, (London, 1958), p.55.

³⁴ Ahrenfeldt, p.5.

large number of psychiatric casualties and how they should be treated.³⁵ The wide range of symptoms presented by patients suffering from combat related complaints was described in a recent study where some 94 separate symptoms of ‘war neurosis’ were identified, the first ten in order of frequency being; difficulty in performing tasks, fatigue, shortness of breath, persistent anxiety, weakness, irregular heartbeat, headaches, difficulty in sleeping, tremors, dizziness or giddiness.³⁶ During the extensive operations over the battle of the Somme, fifteen RFC officers had been diagnosed as suffering from psychological disorders. One was diagnosed with ‘shell shock’, but most were felt to be suffering from neurasthenia. In fact, the symptoms shown were like those shown by ground forces. However, one difference between the RFC and ground forces was noted. In his evidence to the War Office Committee, RAF Medical Officer, F A Hampton said:

In the Infantry a man breaks down through an explosion or otherwise and develops the thing suddenly, but in the Flying Corps they get more and more nervous until somebody sends them on leave or until they crash.³⁷

The Official History of Medical Services describes the almost immediate effect of this plethora of symptoms:

A complex terminology was evolved, and special treatments were manufactured in bewildering profusion. Some patients with hysterical symptoms were psycho-analysed,

³⁵ E. Jones & S. Wessely, ‘Battle for the mind: World War 1 and the birth of military psychiatry’ *Lancet* Vol 348 November 2014, pp.1708-14.

³⁶ E. Jones, R. Hodgins-Vermaas, H. McCartney, et al ‘Post-combat syndromes from the Boer War to the Gulf War; a cluster analysis of their nature and attribution’, *British Medical Journal* Vol 324, 9 Feb 2002 pp.321-324.

³⁷ *Cmd 1734, Report of War Office Committee of Enquiry Into “Shell-Shock”* (HMSO, 1922) p.59.

others with mental conflicts were hypnotized; whilst nearly all were treated on lines which could not fail to impress on the soldier's mind the mysteriousness of his malady.'³⁸

With the broad range of symptoms presented, it is not surprising that some senior officers felt that there was little difference between psychoneurosis and malingering and that any special treatment for non-physical symptoms would open the way to easy evasion of duty. The position was more confused when the BEF's appointed neurologist Lt Col Charles Myers who was sent to France in August 1916, noticed that initially all the 'battle shock' cases he saw had been near to an exploding shell and described the patient as suffering from 'shell shock' thus leading to a number of erroneous explanations for war neurosis/combat stress, which confused both diagnosis and treatment.³⁹ The difficulty of diagnosing these patients was noted in a 1916 editorial in the *Lancet* which pointed out that 'the many healthy young males who had suddenly begun to experience neurasthenia, should not be treated as *'sane or insane, but as a no-man's land which defied definition'*.⁴⁰ The acceptance of the undoubted fact that war neurosis could easily be confused with malingering or even cowardice, led to a widespread post-war fear that some of the 346 men whom had been executed during the war may have been in fact suffering from war neurosis and had therefore been unjustly sentenced.⁴¹ In fact most of those soldiers sentenced to

³⁸ Macpherson, *Medical Services* Vol II Chap 1 p.9

³⁹ C. S. Meters., *Shell Shock in France 1914-1918* (London, 1940) p.12; C. Corns & J. Hughes-Wilson, *Blindfold and Alone* (London, 2001), p.73.

⁴⁰ *The Lancet*, 18th March 1916, editorial.

⁴¹ T. Bogacz, 'War Neurosis and Cultural Change in England 1914-22; The Work of the War Office Committee off Enquiry into 'Shell-Shock' *Journal of Contemporary History* Vol 24 (1989) pp.227- 256 & p.227.

death were given a medical board after sentence, which may be at least part of the reason that only about 10% of death sentences were carried out.⁴²

Nevertheless, malingering was a serious concern for the British Army in France throughout the war and military doctors were warned to lookout for soldiers falsifying their symptoms. Doctors were sometimes put in a difficult position having to decide whether the symptoms presented indicated war neurosis or an attempt to evade duty. As one medical officer pointed out, ‘a decision made to exclude neurosis is ‘sometimes to the temporary hurt of an individual, but justice to all the other men as well as discipline demands it’.⁴³ Sufferers from mental shock could be divided into those who showed objective symptoms, such as blindness or paralysis and those with subjective signs of war neurasthenia such as sleeplessness or anxiety states. The difficulty medical officers had to face when making a diagnosis, was increased by the fact that, in the opinion of many senior officers, men suffering the subjective symptoms (such as tics, tremors, fatigue or anxiety) were in many cases in no worse state than men who had not been taken from the front and indeed many officers in the trenches were showing the same symptoms.⁴⁴

⁴² Corns & Hughes-Wilson, *Blindfold and Alone*, p.99-100.

⁴³ J. C. Dunn, *The War the Infantry Knew* (London, 1994), p.76.

⁴⁴ Corns & Hughes-Wilson, *Blindfold and Alone*, p.78.

Causes of war neurosis

The causes of these reactions to combat are complex but clearly apply both to the men in the trenches and to the aircrews operating over the battlefields. The Official Medical History of the War describes the aetiology of psychoneurosis in an 'average soldier'. He starts his active service with what is described as average physical and mental development and having a normal motive of 'seeing his country through' and is able for some time to sustain both the rigors of modern warfare and military discipline. However, sooner or later the physical and emotional stress tells, and he needs a rest, often this is not possible, and the soldier is required to continue at the front and consequently he may reach breaking point: particularly if he is unfortunate enough to see friends killed. The Medical History emphasised the mainly psychological basis of breakdown, pointing out that only 2.5% of soldiers having symptoms of war neurosis showed injury to the nervous system.⁴⁵

It is submitted that a similar process applies to RFC aircrew, albeit in a different fighting environment. Grinker and Spiegel in their major study of World War Two aircrew have provided a convincing rationale for the manifestation of combat stress. They point out that the emotional stress caused by combat comes from four main sources. First is the threat of immediate death or personal injury, secondly the death of friends and colleagues, with sometimes traumatic effects

⁴⁵ Macpherson, *Medical Services Diseases* Vol II Chap 1, pp.18-19.

on unit coherence, and consequent effects on morale. Third, the necessity of taking part in hostile and destructive flying and fighting, with the unexpected trauma of the disjunction between the chivalrous image of air combat and the subjective reality, the and lastly the inevitable cumulative effect of all the emotional stress on an individual's motivation to stay in com.⁴⁶ Additionally, there is the fundamental clash between a man's concept of duty and his impulse for self-preservation.⁴⁷

Dr Wood's research (noted above) which shows that the major cause of combat stress, in all its guises, is fear, is confirmed for aircrew breakdown by a major study carried out 1943. In August 1943 Air-Vice Marshal Sir Charles Symonds and Wing Commander Denis Williams, both psychiatrists, analysed the psychiatric reports of 2919 cases of psychological disorder arising from flying duties seen by neuro-psychiatrists for the year ending 9 February 1943.⁴⁸ After examining the variation in the incidence of flying and combat stress in the various commands and by crew position, the causes of neurosis were considered. The most important finding was that the major cause in almost all cases (99.6%), the cause was psychological. There was very little evidence that physical factors were the cause of neurosis, although some acted as contributory causes.

⁴⁶ R. R. Ginker & J. P. Spiegel, *Men Under Stress* (New York, 1945/1963), pp.54-56; J. Bourke, 'The Experience of Killing' P. Little J. Bourne I, Whitehead (eds.), *The Great World War 1914-1945* (London, 2000) Chapter 16 p.296.

⁴⁷ M. K. Wells, *Courage and Air Warfare* (London, 1995), p.100.

⁴⁸ AVM Sir Charles Symonds & Wg Cdr D. J. Williams, 'Clinical and Statistical Study of Neurosis Precipitated By Flying Duties', FPRC Report 547, in *Aircrew Stress in Wartime Operations* (Academic Press, 1979), Chap II

Altitude, including the effects of anoxia (lack of oxygen) was not found to be significant except in the rare instance of those (few) individuals who have a specific irrational fear of heights. This syndrome may have applied to those pilots reported by Anderson in his study who did well during low level training but who showed signs of stress when flying at greater heights.⁴⁹ Physical injury was sometimes a factor (18%) and often operated after the flyer had been involved in a crash, particularly if hospitalized with time to reflect on his experience. This especially applied to those who suffered from burns, which was a major concern of aircrew. A further effect of hospitalization was often a prolonged absence from flying which itself could lead to loss of confidence. Lastly the injury itself may provide the foundation for symptoms of neurosis. Physical Illness was noted in some (10%) cases, with the sometimes-prolonged absence from flying causing a loss of confidence. Airsickness may be a cause or a symptom of neurosis (2.4%) of cases. The usual pattern showed someone who had suffered airsickness early in training and experienced a recurrence when stressed. Pilots are less vulnerable than other aircrew members. Exhaustion appeared in few cases (2%) as a factor in combat stress, usually after a period of intense operational activity. But as noted above fear is the governing factor as the cause of both flying and combat stress.

⁴⁹ H G Anderson, *The Medical and Surgical Aspects of Aviation* (London, 1919.2000), pp.64-66.

One factor considered by Symonds and Williams was the incidence of ‘predisposition’, that is evidence of a previous individual or family history of nervous instability. They found that 73% of the cases seen showed evidence of constitutional liability to breakdown and 19% were so heavily predisposed that it would have been reasonable to reject them on entry.⁵⁰

In practice the symptoms described by sufferers of combat stress, battle exhaustion, shell shock or war neurosis were often like those fabricated by malingers hoping to avoid duty and therefore could easily be confused. This may be the reason that there was a tendency by doctors to add further symptoms or conditions attributed to ‘combat stress’. Many of the most common symptoms including; ‘tremor, paresis, fatigue, contractures, headache, difficulty sleeping, nightmares, memory loss and fatigue have been commonly observed have been commonly observed in pilots and observers of the RFC, in most cases after considerable exposure to the stress of flying and combat.

An observer may face greater strain because he faces extra pressure. First, he relies on the pilot’s confidence in the air and any lack of confidence on the pilot’s part gives him an extra anxiety. Secondly, in any action irrespective of his own duties his life is in somebody else’s hands, and if involved in a crash he is usually

⁵⁰ Symonds & Williams, *Clinical and Statistical Study*, p.30. A pre-disposition to breakdown, although often apparent in combatants suffering from neurosis, does not necessarily prevent long and effective service before breakdown. See E Miller, *The Neurosis in War* (New York, 1943) p .viii.

helpless.⁵¹ This is strikingly confirmed by a pilot who for operational reasons was required to fly as an observer. Having described some close shaves, including alighting in the sea and several forced landings he wrote:

It is interesting to note that flying as an observer is more trying to the nerves than flying as a pilot. This at any rate was my experience, because after my several months in Gallipoli, during which I had flown about 200 hundred hours, I felt more jumpy than at any time during the two years or more that I flew as a pilot in France.⁵²

Describing the early symptoms of combat stress, Captain Dudley Corbett an RAMC doctor treating RFC patients at the General Hospital at Etaples, reported:

A man notices that he is beginning to feel generally tired and that he has lost some of his original keenness. His sleep does not refresh him. He gets occasional headaches. Later he does not sleep so well his sleep is troubled by nightmares of all kinds. He may notice that he is getting irritable, and can't stand the company of friends....he has to force himself to go up.⁵³

Other writers have emphasised the point that combat stress is manifested by a group of symptoms or conditions which may vary in individual cases. The symptoms shown by aircrew very closely resemble those shown by soldiers in battle. In combat stress cases affecting aircrew there may be a separate issue, fear of flying, underlying the combat stress indicators. A fear of flying, even without combat, can give rise in aircrew to a loss of appetite, headaches, weight

⁵¹ H. G. Anderson, *The Medical and Surgical Aspects of Aviation; With Chapters on Applied Physiology Of Aviation* (London, 1919), p. 61.

⁵² A. A. Walser., (Sqn Ldr MC DFC) 'Memories of Gallipoli' *Cross & Cockade* Volume 45 (4) 2014 p.241.

⁵³ D Corbett, RAMC, 'Report to US Air Service Jan 1918', Air Service Medical (US War Department, 1919) Chapter VI pp.115-117.

loss, insomnia, trembling, paralysis and even temporary blindness. Other common indicators of flying stress include apathy, depression, and irritability.⁵⁴

A contemporary account of combat stress in pilots and observers in the First World War is that by Henry Graeme Anderson.⁵⁵ Anderson was a doctor who before the war worked for several flying clubs. During the war, he worked with the Royal Naval Air Service (RNAS) and with the RFC. He qualified as a pilot in 1916 and later became an instructor. Anderson used the term Aero-Neurosis to cover the various types of nervous breakdown which could occur to flyers. He noted the many other terms which were used, including, flying stress, flying sickness, and aviator's neurasthenia. He described many cases of breakdown during training, before any question of combat arose, when even in the very first days some pilots found that they did not have the temperament for flying, in which case they would usually be removed from training. More often a pilot would show signs of stress, after a reasonable number of hours and whilst wanting to continue with training would show symptoms, such as visible tremors of limbs or lips, functional paralysis and bad dreams (particularly about accidents).⁵⁶ As many volunteers would know little or nothing about flying before starting training and because they had volunteered, they would often be reluctant to admit their fears until those fears became obvious by their reactions to flying. Anderson

⁵⁴ A. Stokes & K Kite, *Flight Stress*, pp.213-14

⁵⁵ H. G. Anderson, *The Medical and Surgical Aspects of Aviation*. The chapter on Applied Physiology (p 58- 71) is by Cdr G H Gotch, a Royal Navy Surgeon who treated some 200 officers who 'broke down' whilst on war service.

⁵⁶ Anderson, *The Medical and Surgical*, p. 55.

noted that some pilots would complete about fifty hours flying before showing signs of neurosis. In these cases, Anderson felt it was worth trying with advice and rest to allow him to complete the course. He recorded that in many cases of failure during training the pupil concerned has either been involved in an accident, often without sustaining any injury, or has witnessed one.⁵⁷ He felt that in most cases if a pilot or observer successfully completes training it can be accepted that 'flying' itself does not cause any difficulty.

The incidence of breakdowns by pilots and observers during operational flying is not surprisingly, greater than during training. Anderson also notes some of the additional causes of anxiety which often contributed to the onset of neurosis. Some of these factors were especially prevalent in 1914-1918, because aircraft were still primitive and unreliable, and the general dangers of flying were not always understood. Lack of oxygen and its effects on aircrew were unfamiliar and the cause of fatigue, headaches (in the air and after flying), giddiness, and errors of judgement. The heights which aircraft operated (15000ft-20000ft) and the effects of slipstream on exposed extremities also affected pilots and observers. Many of these factors would not have applied during training; not only would they be flying be at low level, but the aircraft used, particularly in the first two years of war, would be slow, basic, and proven types.⁵⁸

⁵⁷ Anderson, p.53-54.

⁵⁸ C. Lewis, *Sagittarius Rising* (London, 1936), pp.22-25.

The term 'flying stress' was used by Dr James Birley in 1920 in a series of lectures when he described his work as an RFC neurologist in the First World War. Birley was one of the first to study the unknown stresses of flying, and the effects of these stresses on the aircrew. Birley, in his capacity as RFC neurologist, became uneasy when he noted Flying Stress being used as a diagnosis in cases where in his opinion the cause of the nervous disorder was, not the stress of flying, but 'undue susceptibility to mental shock'. This view was consistent with his view that some individuals were temperamentally unsuited for flying, often because of a previous 'nervous' occurrence either to themselves or near family and in his 1920 report *Temperament and Service Flying* he suggested that some conditions called flying stress, could better be described as 'flying distress'.⁵⁹

As noted elsewhere in this study, the procedures for the recruitment of RFC aircrew involved a basic medical examination, which did not examine the psychological background of the candidate, or his temperamental fitness for training to fly or fight. Nevertheless, during the Air War in France in 1914-1918, the temperamental unfitness of some aircrew had been recognised by Birley and in a study by Captain N S Gilcrest.⁶⁰ It was felt at that time that these failures

⁵⁹ C. P. Symonds (AVM, Sir) 'Use & Abuse of the term 'Flying Stress' *AP 3139* Chapter II (HMSO, 1947), pp. 24-24 quoting Birley's report *Medical Problems of Flying*, MRC (1920).

⁶⁰ A Captain RAMC attached to RFC who analysed the causes of breakdown in flying noted below.

were almost certainly the result of the casual and haphazard recruitment procedures.

Despite this knowledge and 'improved' inter-war selection methods the RAF were still surprised and disturbed in 1939, at the beginning of the Second World War, by the many crew members who broke down with symptoms of combat stress after the first few bombing operations (up to 50%) and the immediate effect these breakdowns had on morale.⁶¹ One possible contributory factor to the high breakdown figure with these crews was the fact that a high proportion of those involved were not full time aircrew at all and the gunners and wireless operators taking part in these operations were ground tradesmen who had volunteered to fly as part time crew members⁶²

The only recognised aircrew categories at that time were Pilot and Observer and it was 1940 before the aircrew categories of Air Gunner and Wireless Operator were introduced (and trained as aircrew). Later Navigator and Flight Engineer specialisations were added.⁶³

These aircrew failures surprised the service because it had been expected that flying/combat stress would not be a factor in early operations as it was believed that trained aircrew would be able to bear considerable exposure before suffering

⁶¹ D. D. Reid, 'The Historical Background Wartime Research in Psychology in The Royal Air Force' in *Aircrew Stress in Wartime Operations* (London, 1948), pp.3-5.

⁶² Webster & Frankland Vol I pp.195-197. NB These volunteers were not given proper credit for their contribution, as shown when Fairy Battle crew Fg Officer Garland and Sgt Gray were awarded (posthumous) VCs for a gallant attack on a bridge but their Gunner Leading Aircraftman L R Reynolds was ignored.

⁶³ Jefford, *Observers and Navigators*, p.185-190.

disabling combat stress.⁶⁴ It seems that the RAF selection procedures in the second war still missed those 'predisposed' to breakdown. Confirmation came in a 1943 study of aircrew who were removed from operations for psychological reasons. It found that 75% of the cases showed some previous family or personal history of neuropathy:

These men are vulnerable to stress, and the severely predisposed often breakdown over lying duties without being exposed to any stress as judged by average experience. At the other extreme stress, may be severe enough to cause a breakdown in men with no disposition.⁶⁵

In fact, several studies have shown that attempts to evolve selection procedures which identify those candidates who are psychologically unfitted for service, are of limited effectiveness. Firstly, it cannot be known at the time of selection what effect the key factors of leadership, training, morale group cohesion and equipment will have on the individual. Secondly the intensity or duration of combat is also unknown.⁶⁶ With regard to pre-disposition, perhaps the most compelling reason for failure to anticipate breakdown during selection procedures, is that given by the most experienced RAF psychiatrist:

it must be admitted that persistent enquiry in most people will reveal some imperfection in the family or personal history of a kind which may be regarded as a possible factor in the causation of breakdown. Such a discovery does not necessarily mean that the imperfections revealed have acted casually in the breakdown which has occurred, for

⁶⁴ Symonds, *The Human Response*, pp.703-706; N.S. Gilcrest, 'An Analysis OF Causes Of Breakdown In Flying', *British Medical Journal* Vol 2 (3015) (1918) pp 401-404; S. Wessely, 'Twentieth-Century Theories on Combat Motivation and Breakdown' *Journal of Contemporary History* Vol 4 (2) 2006, pp.269-286; F. Dillon, 'Neurosis Among Combatant Troops In The Great War' *British Medical Journal* Vol 2 No 4096 (1939), pp.63-66 & p.63. See also Chapter One of this work.

⁶⁵ C. P. Symonds (AVM Sir) & D. J. Williams 'Clinical and Statistical study of Neurosis Precipitated by Flying Duties' *Aircrew Stress in Flying Operations* (London, 1979), chapter II (FPRC Report 547 1943, p.40.

⁶⁶ E Jones & S Wessely, *Shell Shock to PTSD* (London, 2005), pp.112-113.

there is a great variety in pre-disposing factors and an equal variety in the factors of external stress.⁶⁷

There is also the fact that in many cases, sometimes with evidence of pre-disposition, before the breakdown the sufferer will have done credit to himself and his unit.⁶⁸

As already seen, it is evident that the main factor in causing flying and/or combat stress is fear, a result of exposure to danger. This fear is often recognised by aircrew both in themselves and others and may be camouflaged by being referred to in a jocular fashion, hence ‘wind up’ in the First World War and having ‘the twitch’ in 1939-1945, (and after).

One additional important factor affecting the onset of combat stress is the amount of ‘non-flying’ stress evidenced by individual aircrew, for example it was noted by both Symonds and Gilcrest that married men had a higher incidence of stress than single men. It has not been possible to obtain the numbers of RFC aircrew who were married, but it is likely to have been very few bearing in mind both social conditions in the early twentieth Century and the age of most recruits to that service.

⁶⁷ C P Symonds (AVM Sir), ‘A Series of Cases with Psychological Disorder Examined in Relation to the Problems of Selection of Flying Persona’ *AP 3139* (HMSO,1947) Chapter III, p.28.

⁶⁸ E Miller, *The Neurosis in War*, (New York, 1943), p viii, p. 9; L A Pattinson, *99 Squadron History* (London, 1920) p.53. He notes two pilots and an observer, admitted to hospital with ‘flying sickness’ who had been unwell for several weeks but had continued to fly. See also RAFM CC V A Beecroft, W Walker and E Taylor. N S Gilcrest, ‘An Analysis of Cause of Breakdown in Flying’ *The British Medical Journal* 12 Oct 1918 p.402.

In both World Wars, the high command of the RFC and the RAF, avoided the use of the word's 'fear' or 'cowardice' in administrative and medical records when documenting the treatment or disposal of aircrew in cases of combat stress.⁶⁹ In these cases, the term 'loss of confidence' was used, which recognises the importance of confidence to all aircrew and accepts that lack of confidence is a factor in flying accidents, operational failure and psychological breakdown, but at the same time avoiding any implication of cowardice.⁷⁰

Treatment and Disposal

The treatment of aircrew who were removed from operational duty for medical reasons because of combat stress was in the main similar to that proscribed for soldiers diagnosed as suffering from shell shock. Until 1917, all aircrew who were removed from flying duties were sent directly back to the UK.

However, by early 1917, all aircrew suffering from fatigue or stress related conditions were initially sent to the 24th Central Hospital at Etaples, (where a wing for the RFC had been established) for assessment and if necessary, similar treatment to that outlined below.⁷¹

⁶⁹ See Chapter 1.

⁷⁰ S. C. Rexford-Welch, *Medical History Of The Second World War; The Royal Air Force Medical Services Vol II Commands* pp.122-140; E. Jones, 'LMF: The Use of Psychiatric Stigma in the Royal Air Force in the Second World War' *The Journal of Military History* Vol 70 (2006) pp.439-458; A. D. English, 'A Predisposition to Cowardice? Aviation Psychology and the Genesis of 'lack of Moral Fibre' in *War & Society*, Vol 13 No 1 (1995) pp.15-33.

⁷¹ D. H. Robinson, *The Dangerous Sky*, p.73.

During the first six months of warfare on the western front arrangements for treating soldiers suffering from shell shock or other war neurosis were haphazard and inconsistent. Most patients were evacuated back to the UK without any diagnosis having been made as to their condition and very few returned to front line service. A further complication was what the Army medical authorities called 'misguided' public opinion which had raised the psychoneurosis to the dignity of a new war disease, before which doctors were helpless, but which demanded immediate action. However, it was the increasing wastage of manpower from psycho-neuroses, which started in the autumn of 1915 with the battle of Loos and continued with the even greater losses at the Somme which made the problem of treatment urgent and in May 1916 the consulting neurologist (Lt Col G Holmes) and consulting psychologist (Lt Col C S Myers) were responsible for the setting up of four specialist centres, at a safe distance from the front, for rapid diagnosis and treatment.⁷² These centres called 'not yet diagnosed nervous' (NYDN) were based on a French model of forward neurology centres. As early as May 1915 the French Army Authorities were concerned by the numbers of functional and psychological cases being referred to base hospitals. The neurologist to the Sixth army (Georges Guillain) argued that these disorders could be cured if treated early and in the militarized zone. A system of forward neuropsychiatric centres was set up. By December 1916, the head of the Second

⁷² Macpherson, *Medical Services, Diseases of the War* Vol II Chap 1, pp.10-11.

Army's unit (Andre Leri) reported that 91% of patients had been successfully treated and claimed that some 600 had been sent back to the front in a few days.⁷³

The BEF command encouraged this 'forward psychiatry' system partly because of the French claims of a high return to duty rate. but also, because as noted above, once a soldier had been returned to UK it was unlikely that he would return to the front.⁷⁴

These centres soon proved their usefulness, with some units claiming a return to duty rate of 80%.⁷⁵ Any confirmed psychoneuroses cases were evacuated to special neurological hospitals. Several disciplinary safeguards were imposed, of which the most important was the Adjutant-General's order which laid down that no patient 'who, without any visible wound, became non-effective from the effects of British or enemy weapons in action' was to be evacuated unless to the special centre.⁷⁶

The military authorities had not only accepted that psychoneuroses had to be recognised and that some cases required specialist medical care but just as importantly had realised:

the subject is, however, so bound up with up with the maintenance of moral in the army that every soldier who is not effective owing to nervous breakdown must be the subject of careful enquiry. In no case is he to be evacuated to the base unless his condition warrants such a procedure.⁷⁷

⁷³ E. Jones & S. Wessely, 'Forward Psychiatry in the Military; Its origins and Effectiveness' *Journal of Traumatic Stress* Vol 16 No 4 (2003) pp.411-419.

⁷⁴ Jones & Wessely, *Battle for The Mind*, p.1708.

⁷⁵ Jones & Wessely, *Forward Psychiatry*, p.412.

⁷⁶ Macpherson, *Medical Services Diseases of the War*, Vol II Chap 1, p.11.

⁷⁷ *Ibid.*, p.12.

The centres were situated some ten or twelve miles behind the front line, if possible, on a main road and near a railway siding. Patients arrived by ambulance in small groups of six or twelve, although occasionally when fighting was intense in convoys of ambulances bringing as many as forty to fifty. As it was important to ensure the separation of one type of case from another, on arrival all patients were sent to an admission block where they were divided into groups.⁷⁸

Each group was then kept in separate wards and as recovery took place were passed into a convalescent block, which was itself divided into two sections, early convalescence and final convalescence. The routine in the in the convalescent block was relaxed but disciplined, with exercise and games arranged and a lending library available. There was originally some concern that as the centres were within the sound of gunfire some patients might be adversely affected, but in the event, it was considered that for most patients staying in the forward area during recuperation helped their recovery.⁷⁹ Those patients who did not improve within ten days and those who became worse were sent back to the special base hospitals.

At the start of the war, medical provision for the RFC was minimal, there was no provision for medical officers with RFC units and the only medical coverage was

⁷⁸Copied from A G Butler, *The Official History of the Australian Army, Medical Services* Vol III Chapter II p.123.

⁷⁹ Macpherson, *Medical Service: Diseases* Vol II Chapter 1, pp.13-14.

the establishment of one medical orderly to each squadron⁸⁰. However, by 1917 the RFC had grown to over 100,000 personnel with an organisation for Home defence as well as more than fifty squadrons (the AOB showed 93 squadrons in August 1918) in France organised in ten wings and many air parks and airfields on the western front alone and the need for medical support was recognised. At that time most Squadrons had an establishment of 18 aircraft and up to 36 officers and from 200 to 250 other personnel. To meet the undoubted need for medical cover, it was decided that each wing would have a medical officer whose duty would be to keep in touch with the flying personal of the wing and see all sick officers and each airfield would be provided with a Crossely ambulance.⁸¹ Non-flying personnel were treated in the ordinary field hospital; their ultimate disposal being decided by an RFC medical officer. The importance of medical support to the RFC in France is indicated by the fact that about 15% of RFC aircrew sent to France were returned to Home Establishment, some after a noticeably short time at the front. This figure does not include those sent home for illness (non-psychiatric) or following an accident. Although the Squadron Commander could send back to UK a pilot or observer with whom he was dissatisfied, and some did for operational reasons, (lack of piloting skill or inadequate training), more were sent home with a medical diagnosis of flying

⁸⁰ Macpherson, *Medical History, General Services Vol II* Chapter IV p.112.

⁸¹ Macpherson. *Medical History* p.113.

stress, nerves, neurasthenia, or what came to be the standard diagnosis for neurosis; Flying Sickness.⁸²

For those patients both Army and RFC, who were returned to the UK, the treatment they received, usually some form of psycho-therapy, was dependent upon the hospital they were sent to and the psychiatrist or neurologist in attendance.

Neurology in 1914-1918 was still in what could be considered an early developmental stage. It had progressed from knowledge of the internal structure of the brain, spinal cord and nerves to the consideration of the syndromes that are the outward sign of neural injury or degeneration. These disorders, because they seemed to have no base of pathological anatomy, were called ‘functional’ and included ill-defined syndromes such as ‘neurasthenia’, ‘hysteria’, and ‘anxiety state’. A significant development, which predicted the way in which neurology would develop, was the naming by Herbert Page of St Mary’s Hospital London as “traumatic neurosis” the symptoms of ‘railway spine’, which was the term applied to the mysterious symptoms following the shock of railway accidents, particularly when the question of compensation arose (perhaps the origin of ‘whiplash’). Page claimed that the symptoms of railway spine were largely and sometimes entirely mental. The event of ‘shell shock’ casualties in 1915 not only confirmed Page’s theory but led to neurologists to begin thinking along

⁸² P Dye, ‘The Aviator as Superhero’ *Air Power* Vol 7 (3) 2004, pp.65-72.

psychological lines about neurological conditions. Today, we would describe the work of the neurologists as psychiatry.⁸³

Psychiatry, the study of neurosis and insanity, had, by the early 20th Century developed along three lines of research, (i) experimental psychology, which showed that common sensation could be analysed into visceral and muscular components and separated from tactile sensations. (ii) Comparative psychology, the attempt to define and categorise the motives and mechanisms which lay behind behaviour and conduct. (iii) Morbid psychology, the study of the mind from the study of its disorders; the psycho-analytic school. Some neurologists treating patients with disorders which fell between sanity and madness and for which no physical cause could be found, divided them into categories of 'hysteria and neurasthenia depending upon their mental state as either emotional or depressed.'⁸⁴

By 1913, mainly influenced by foreign neurologist's psychoanalysis was becoming a common procedure. Sigmund Freud was an early practitioner of psychoanalysis; although trained in physical neurology, he developed an alternative view of the mind. He argued that Hysteria was produced by the suppression of emotions, memories and experiences.⁸⁵ The memories were repressed to avoid the mental conflict their presence in the conscious would

⁸³ I. Palmer, 'Battle stress and its Treatment' *RUSI Journal* Vol 143 No 1 (1998), p.65.

⁸⁴ B. Shepard, *A War of Nerves*, pp.8-9.

⁸⁵ R. Slobodin, *W.H.R Rivers* (London, 1997), pp.74-75 setting out where Rivers disagreed with Freud.

produce. In some cases, this repression would result in physical symptoms and only by bringing these repressed memories to the surface through ‘abreaction’ (free expression) could a cure be achieved.

Professor W H R Rivers was a supporter of psychoanalysis and the theory of repression, although he disagreed with Freud about the theory of ‘universal sexual significance’ of dream symbolism.⁸⁶ He felt that although Freud was wrong about the underlying cause of conflict of the mind, nevertheless, Freud’s theory of the unconscious was of direct practical use in diagnosis and treatment.⁸⁷

In 1916 Rivers was commissioned as a Captain in the RAMC and appointed to Craiglockhart Hospital for Officers: most of the officers he treated were from RFC/RAF but, as senior psychiatrist, he treated Siegfried Sassoon, who as an act of wilful defiance of military authority had thrown his Military Cross into the Mersey and was threatened with a court-martial. Some influential friends and the testimony of Robert Graves at a medical board resulted in him being sent to Craiglockhart where Rivers (and others) were developing new treatment methods.⁸⁸ In the event, Rivers treatment was in large part responsible for Sassoon’s return to duty.

Despite the developments in diagnosis and treatments noted above, the cause of the great increase in casualties suffering from nervous and mental shock was still

⁸⁶ R. Slobodin, *W. H. R. Rivers*, (Stroud, 1978,1997), pp.77-78.

⁸⁷ Shepard, *A War of Nerves*, pp.86-87.

⁸⁸ Slobodin, *W H R Rivers*, pp.62-6.

controversial. Myers had used the term shell shock because of the apparent correlation between the symptoms and shell fire when it had seemed reasonable to think that there had been a physical cause and this term had become (particularly by the public in England) as synonymous with trench warfare. On the other hand, one noted neurologist, Dr F W Nott, who at first felt shell shock had a physical origin, possibly a form of concussion caused by blast, later accepted a psychological explanation.⁸⁹ Army commanders somewhat reluctantly accepted a psychological cause for shell shock mainly because it offered a possibility of a cure and a return to active duty. This acceptance overrode their concern that a diagnosis of 'shell shock' provided a credible way out of front line service.⁹⁰ In the event, by 1915 it had become apparent that shell shock, war neurosis, hysteria or neurasthenia (in other words 'combat stress') was a psychological disorder and that psychotherapeutic techniques could be used to treat patients.⁹¹ Craiglockhart Hospital is probably the best known of the hospitals dealing with the psychological casualties of the Western Front, What happened at the hospital during its 28 months' existence is an example of the way treatment methods developed in that time.⁹² The hospital was opened in October

⁸⁹ E. Jones & S. Wessely, 'Battle for the Mind', pp.1708-14

⁹⁰ Ibid, p.1709.

⁹¹ T. L. Loughran, *'Shell Shock in the First World War Britain; An Intellectual and Medical History'* (Unpublished Thesis, University of London, 2006), chap 5, pp.124-125; E. Wittower & J. P. Spillane, 'Neurosis in War', *The British Medical Journal*, Feb 10 1940, p.225.

⁹² T. E. F. Webb, 'Dottyville-Craiglockhart War Hospital and shell shock treatment in the first World War' *Journal of The Royal Society of Medicine* Vol 99 (July 2006), pp.342-346. This is an account of the hospital drawn from hospital records, the admission and discharge records. The hospital is the best known of psychiatric hospitals used in the war, in part due to Sassoon, Owen and A G McDonnell being patients there, but it was also where Rivers introduced his own 'abreaction' treatment regime.

1916 in order to help cope with the vast increase of (Officer) psychological casualties from the battles of the Somme. From 1917, RFC officers were also sent there.

The first Commanding Officer was a local doctor with some experience in treating neurasthenia, Major William Bryce, who believed in firm and sometimes harsh treatment of patients. However, in October 1917, a War Office inspection resulted in the replacement of Bryce with Colonel Balfour-Graham. Notwithstanding the change the hospital regime remained unsympathetic with strict discipline and little recreation being allowed to the patients. At that time, the attitude of some senior officers in the RAMC was that shell shock sufferers were 'lead-swingers' and malingers. At Craiglockhart, possibly due to unsatisfactory results, a further inspection resulted in the appointment of a new commander, Professor William Brown, who with Arthur Brock an Edinburgh clinician and later with Rivers, instituted a system of 'cognitive therapy with in an environmental and behavioural approach' Which meant in practice helping the patient to help himself. This was done by a programme of activities, often based on sporting and entertainment facilities available and additionally by arranging temporary teaching jobs and assistance to local farmers.

In his practice Rivers relied principally on what he called Autonosia and re-education. The subject learns to know himself and the process brings to light and discussion of long-past traumatic experiences, Rivers said:

...of more importance is the process by which the patient is led to understand how the disorder has developed....If the patient learns that his disease is only the expression of an exaggeration of a wide-spread trend of feeling, thought, or action, his condition will no longer appear mysterious, terrifying, or horrible, but will assume proportions which can be faced rationally and dispassionately.⁹³

Despite the change of regime, the records of the hospital show a reluctance to admit that the patients were suffering from a psychological disorder, although 'neurasthenia' was routinely entered as a diagnosis it was often subordinated to physical complaints, often trivial.⁹⁴ Nevertheless, the treatment regime did have some success. Between October 1916 and March 1919 some 1736 patients with shell shock were treated at the hospital; a total of 758 were noted as having been returned to duty, 89 were recorded as returned to home (administrative) duty and 78 were discharged to light duties. On the other hand, 735 patients were discharged as medically unfit and 141 were transferred to other units for further treatment, probably for long term rehabilitation.⁹⁵ The results of treatment at Craiglockhart may not be representative of other hospitals, (especially as only Officers were treated) but in any event should be seen in the context of total casualties for shell shock / war neurosis. *The History of the Great War Medical Services* estimates that by the end of the war 'about 80,000' patients had been admitted as psychological battle casualties in France.⁹⁶

⁹³ W. H. R. Rivers, *The Encyclopaedia of Religion and Ethics Vol 10 (1918)* p.437 quoted in R. Slobodin W H R Rivers (London, 1978) p.66. This was the basis for River's use of Abreaction, or 'recall and understand' as treatment for war neurosis, including 'Flying Sickness' see W H R Rivers, 'The Repression of War Experience, *The Lancet* Feb 2 1918 (an address to Royal Society of Medicine 14th Dec 1917).

⁹⁴ Webb, Dotyville, p.344.

⁹⁵ Webb, pp. 344-345.

⁹⁶ Macpherson, *Medical Services, Diseases*, Vol II chap 1, p.7.

From early 1917, RFC casualties increased dramatically and with this increase came many psychological patients. The RFC hospital at Hampstead Heath was, with Craiglockhart, an allocated treatment centre for RFC aircrew (including Balloon Observers) and in December 1917 Rivers was appointed Consultant Psychologist to the RFC. To prepare himself for this appointment Rivers studied flying and flew often including being flown on aerobatic flights in order to understand the mental qualities required in military aviation. This flying experience enabled Rivers to understand some of the reasons for aircrew suffering from neurosis (flying sickness). He also discovered and noted that aircrew's symptoms were somewhat different to soldiers and balloon observers suffering with shell-shock. Rivers believed that a major reason was that unlike ground troops, a pilot had a great deal of influence over what happened to him. He had the option to retreat if he wished or, at his own discretion, could avoid action altogether. This was not the case with balloon observers who were still in the front line when the balloons were on the ground and subjected to the same conditions as the infantry. Aircraft observers also had less control of their fate, being dependent upon the pilot for the way the flight was conducted and his competence as an aviator.

In his evidence to the War Office Enquiry on Shell Shock, Rivers objected to the use of the term shell-shock, stating that in his view 'stress' was the cause of war neurosis and the shell-shock element was in most cases the last straw. He

distinguished between two varieties of cases. The first being that of an Officer who breaks down soon after going into action because he is unfitted for the position in which he finds himself. Rivers felt that these cases ought not to be considered as cases of neurosis, in his experience such cases were generally not very severe and soon recovered.

The second class of cases, those who break down after 'long and continued strain' officers who despite early stressful experiences, continued to carry out their duty until they finally collapsed. He pointed out that cases of this kind displayed more severe symptoms and could develop a real neurosis. He emphasized that stress was a wide term including, sleeplessness, anxiety, fatigue and responsibility. Rivers referred to the RFC/RAF where there were three different situations, the pilot, the observer and the balloon observer.

He said the pilots frequently had severe concussions and were much more 'knocked about' than the other two groups, but such neurosis as they had been slight, sometimes trivial compared with army cases:

All they wanted was talk to get rid of the depression and then go for a holiday.⁹⁷

On the other hand, observers had more severe symptoms, and the balloon section suffered the worst cases of psycho-neurosis he had seen.

⁹⁷ Cmd 1734 *Report of War Office Committee int Shell-Shock* - Dr W H R Rivers, 'Evidence', pp.54-56 & p.56.

Explaining these differences in the reaction to danger of these cases he referred to man's normal reaction to danger, what he called: manipulative activity. Every animal has a reaction to danger perhaps more than one.

A pilot has the most options and when he is in danger his mind is occupied with flying the aircraft. On the other hand, the observer is occupied only some of the time, he is not in charge and there are times when he may suffer considerable stress, for example on take-off or landing. Referring to balloons Rivers said:

The balloon man has a certain amount of observation to do, but most of the time he has no activity whatever and is sitting in the middle of a target. I believe it was the absence of manipulative activity that led to his more frequent and severe breakdown.⁹⁸

Rivers stressed that he did not use Neurasthenia as a clinical term, he called the neurosis caused by combat stress 'anxiety neurosis' and those who were repressing were using a normal mechanism in a cause for which it was not suitable. The things which men were trying to put out their mind were too powerful.⁹⁹

As noted above, Rivers believed that 'repression' was in large part responsible for producing war neurosis and was tightly bound up with its treatment. He defines Repression as:

the process whereby a person endeavours to thrust out of his memory some part of his mental content, and it is also used for the state which ensues when, either through this

⁹⁸ Cmd 1734, p.57.

⁹⁹ Cmd 1734, p.58.

process or by some other means, part of the mental content has become inaccessible to manifest consciousness.¹⁰⁰

He points out that repression is not harmful but may be under conditions in which it fails to adapt the individual to his environment. He notes that the process of repression does not end when the soldier is removed from the combat scene and sometimes new symptoms arise when in a safe environment.

His approach was intended first to help patient to recover the stressful memory or incidents (accepting the natural inclination to repress such memories) and then to see whether it is possible to make them tolerable, or even pleasant companions instead of evil influences.

His treatment generally consisted of one to one 'talking sessions' in which the patient told the history of his illness and Rivers attempted to show why the memory could be borne and become in some way positive. In his lecture to the Royal Society of Medicine he gave an example of an officer who had been first buried by a shell explosion but remained on duty for more than two months, despite suffering nightmares about that experience. He then collapsed completely after an incident when he had searched for a missing officer and found him blown to pieces with head and limbs lying separated. Following that incident, he had recurring nightmares and dreaded to go to sleep. Rivers felt that the problem in

¹⁰⁰ W. H. R. Rivers, 'The Repression of War Experience', An address to the Royal Society of Medicine 17th December 1917, p.1.

this case was to find some aspect of the experience which would enable the patient to deflect his thoughts from the horror of the incident. He said:

The aspect to which I drew his attention was that the mangled state of the body of his friend was conclusive evidence that he had been killed outright and had been spared the long and lingering suffering which is often the fate of those who suffer mortal wounds. He brightened at once and said that this aspect of the case had never occurred to him, nor had it been suggested by any of those to whom he had previously related his story. He saw at once that was an aspect of his experience upon which he could allow his thought to dwell.¹⁰¹

Rivers noted other cases which had similar positive results but cautioned that long continued repression could become a habit which would not always respond to his treatment of 'Abreaction' (free expression and consequent release of previously repressed emotions).

The above outline of the treatment methods applied by Rivers was followed by many of the psychiatrists working in the RFC hospitals at Craiglockhart (Major W H Bryce) and Royal Hospital, Hampstead Heath, including Arthur Brock and Professor William Brown.

The only previous study of First World War aircrew breakdown was an analysis carried out by Captain N S Gilcrest RAMC, in 1918. He considered 33 qualified pilots, 61 pupil pilots, 1 qualified observer and 2 pupil observers all of whom had been under review by the Royal Air Force Special Medical Board.¹⁰² He classed as failure those patients who were considered permanently unfit to return to duty.

¹⁰¹ Rivers, 'The Repression of War Experience', p.4.

¹⁰² N. D. Gilcrest. 'An Analysis of Causes of Breakdown in Flying', *British Medical Journal* Vol 2 no 3015 (1918) pp. 401-403.

Of the above 97 patients, 67 were considered failures due to ‘Psychological or subjective ‘nerves’, loss of confidence or general nervous breakdown. Another four failed because of epilepsy and fainting fits and eleven for nausea or vomiting in the air. Gilcrest also found that of the 67 ‘psychological’ failures, 45 had a nervous personal or family history and 20 had suffered a previous nervous breakdown. In his analysis of these breakdowns’ Dr Gilcrest emphasised the importance of the relation between breakdown and some previous individual or family history of nervous breakdown:

it is very certain that unstable nervous temperament is hereditary, and, though this alone is not very important, its existence should call for the further history to be carefully sifted...nothing I know of will more surely lead to failure in air work (especially piloting) than the previous history of a serious nervous breakdown.¹⁰³

This analysis by Gilcrest’s of the causes of breakdown is useful in a number of ways; it points to the importance of nervous stability in aircrew, it suggest that the failure rate in aircrew under training could be significant and also suggests that if a pilot or observer is able to deal with stress for two hundred hours flying on operations his selection and training would have been justified.¹⁰⁴ Of course his analysis tells us little about the actual incidence as all his subjects had been already removed from duty and referred to the Royal Air Force Special Board.

¹⁰³ Ibid, p.402.

¹⁰⁴ Ibid, p.403.

The above account of the symptoms and causes of combat stress establishes without doubt that the major factor in the onset of combat stress is fear, often described as ‘anxiety neurosis’. In combat, and sometimes in flying without combat situations, most airmen experience at some time the conflict between the entirely natural and reasonable instinct for self-preservation and the knowledge that at any moment their life is threatened. This personal conflict affects some individuals more quickly and more strongly and, in many cases, is responsible for an early breakdown, sometimes even in training.

Several the studies noted above especially those of Gilcrest, Williams and Symonds, Birley and Grinkler and Spiegel have emphasised the major influence of ‘predisposition’ to nervous complaints, (not generally discovered by induction medical tests) as a factor in the onset of combat stress, but as already noted it is probably impossible to eliminate those who *will* fail as the conditions of combat are unpredictable.

The next three chapters in this work will examine RFC/RAF operations on the western front from 1914-1918, including the operations of the Independent Force noting casualty and accident rates and the consequent effects on squadron morale and aircrew breakdown

Chapter Five

War in the Air 1914-1916

This chapter and the two following will examine the operations of the RFC/RAF over the Western Front to analyse adverse psychological reactions to combat stress and the importance of countervailing factors including high morale and sound leadership

In August 1914, the commander of the RFC, Brigadier-General Sir David Henderson, like everyone else, believed the war would be short. Accordingly, he sent all the available squadrons to France, to support the BEF.

The first tasks of the RFC in support of the army consisted of reconnaissance flights which in most cases were not opposed by enemy aircraft. However, by early 1915 and the development of trench warfare the Germans had introduced anti-aircraft guns to the front line, and many aircraft came back from flights over the lines with damage from shell splinters.¹ Enemy gunfire and the development of air to air combat meant that by the end of the period covered by this chapter, the number of casualties incurred by the RFC had increased from a handful, easily bearable, in 1915 to over 800 (including 55 killed in flying accidents) in 1916.

¹ H A Jones, *The War in the Air*, Volume II, (HMSO, 1922), pp.169-170. (henceforth *TWITA*)

In May 1915 the first cases of aircrew removed from flying duties because of psychological disorder occurred. By December 1916, cases of Neurasthenia, debility, DAH and NYDN (not yet diagnosed Nervous) had been diagnosed.²

The table below sets out the position at the end of the first two years of major air operations, followed by an examination and analysis of the air war in that period.

Casualties/Flying sickness-1915-1916 ³						
	KIA	WIA	POW	KIFA	WIFA	Fly/S
1915	47	45	65	20	14	5
1916	292	147	203	55	27	20 ⁴

On August 13th, 1914 the first aircraft of numbers 2,3,4 and 5 squadrons of the of Royal Flying Corps set out to cross the English Channel to take up their position as the Air Element of the British Expeditionary Force in France.

At that time, the total strength of the RFC was one hundred and seventy-nine aircraft, only forty of which were considered capable of flying the twenty odd miles of open sea to France. The four squadrons which went to France took a total of 87 pilots, there were no observers, and a few more qualified pilots were among those travelling with the Royal Flying Corps Headquarters when it made

² Neurasthenia, a general term used for those suffering from a combination of anxiety, fatigue, sleeplessness, irritability and emotional turmoil. Psychological, relating to or arising from the mind (psychiatric, arising from mental disease)

³ KIA, killed in action, includes died of wounds, died as POW immediately after capture. WIA wounded in action (not noted if slight), POW Prisoner of War. if wounded and captured noted under POW, KIFA killed in flying accident in France on operational squadrons WIFA injured in flying accident on operational squadron in France; FS includes earlier use of Neurasthenia, DAH and NYD-N. The figures above include 19 RNAS aircrew KIA/KIFA and 13 POW.

⁴ Casualty figures from T. Henshaw, *The Sky Their Battlefield* (Grub Street Books, 2014), pp.3-46; Jones, *TWITA*, Volume VI Appendix XXXVII; E R Hooton, *War Over The Trenches* (London, 2010), pp.90-126, 'The Somme'. For FS numbers RAFM Casualty Cards.

its way to France. These pilots with the 130 pilots of the RNAS, were all that were immediately available.⁵ The pilots and aircraft who were to undertake this crossing were ordered to assemble at Dover on 12th August; the pilots were briefed to carry a revolver, field glasses, a spare pair of goggles, a water- bottle, a small stove, biscuits cold meat and a piece of chocolate. Pilots were also provided with maps of France and Belgium and perhaps more immediately useful, a tyre inner tube for use as a life jacket.⁶

For these flights, each pilot had as passenger, a ground crew air mechanic, (AM) who it was thought would be more useful than another pilot if the aircraft had to make a forced landing, either on the way to Dover, or in France. One result of this arrangement was that the first casualties suffered by the RFC in the war were a Pilot and an Air Mechanic. Lieutenant R Skene of No 3 Squadron, with Air Mechanic R K Barlow as his passenger, crashed on take-off at Netheravon; both pilot and passenger were killed.⁷

The RFC went to France with a somewhat heterogeneous collection of aircraft. Nos 2 and 4 squadrons were equipped with BE2s, No 3 squadron had a mix of Bleriot's and Henri Farmans and No 5 Squadron had a mix of Henri Farmans Avros and BE8s. The total number of aircraft arriving in France was 63,

⁵ Henshaw, *The Sky Their Battlefield*, p.3; Jones, *TWITA* Vol 1 pp 288-289

⁶ Hillary St George Saunders, *Per Ardua The Rise of British Air Power 1911-1939* (London, 1944) p.31-32. R. Barker, *The Royal Flying Corps in World War 1* (London, 1995) p.23.

⁷ Jones *TWITA* Vol 1 p.286. This accident was witnessed by James McCudden who later became the fourth highest scoring British pilot with 57 victories. J T McCudden, *Flying Fury* (London, 1918, 1973), pp.23-24.

consisting of 37 BEs, 12 Henri Farmans, 7 Bleriot, 3 Avros and 4 Sopwith Tabloid.

None of these aircraft was suitable for fighting. The only weapons carried were the service revolvers of the pilots, intended for use if landing in enemy territory. Although the BE2 Biplane had been found suitable as a stable reconnaissance aeroplane, its lack of manoeuvrability was a significant disadvantage. The Henri Farman was tiring to fly, and too slow. The operational performance of these aircraft, (the BE2 top speed 73 MPH and taking nine minutes to get to 3,000 feet, was the best) was generally poor, but perhaps the most noticeable and most important problem was engine reliability. Engine failure is very rare in light aircraft today, but in 1914 and for the rest of the war it was an ever-present danger. Throughout the war there were many crashes both in training and on operational squadrons, many due to engine failure and there are frequent accounts of pilots having to attempt the glide home over the lines following engine or fuel problems. Some of course did not make it and landed on the German side and became prisoners of war.

Notwithstanding the inadequate aircraft they used and the inevitable confusion and frequent changes in location after their arrival in France (all four squadrons moved no fewer than ten times before the end of September 1914),⁸ the morale of the RFC remained high. They were of course all volunteers and members of

⁸ Raleigh, *TWITA* Vol 1 p.305.

elite units, who had joined the RFC for flying and adventure, which was now beginning and they (like everybody else) thought that the war would be short. According to a non-flying officer who saw the pre-flight preparations at Dover, he had never seen '*such exuberance of spirit.*'⁹ Another observer of the aircrew of the RFC in those early days in France was Maurice Baring, who as a member of the RFC Command Staff, moved with the squadrons in August/September 1914 and who described their stay at Le Cateau, one of the many airfields they stayed for short periods following the BEF's moves during the retreat from Mons:

we slept, and when I say we, I mean dozens of pilots fully dressed, in a barn on the top of and underneath an enormous load of straw. We spent an expectant morning at Le Cateau, everybody was quite cheerful, especially the pilots.¹⁰

Morale was certainly helped by the fact that the French treated RFC officers as honoured guests and when possible, they were billeted at the best hotels.

However, it was not long before the first accident happened; on 16th August Lt E Perry and his mechanic H Parfitt flying a No 3 Squadron BE8, crashed on the aerodrome at Amiens and both were killed. Two days later another BE8 flown by 2/Lt R R Smith-Barry with Corporal F Geard crashed at Perrone, Smith-Barry survived with broken legs, but Cpl Geard was killed.¹¹ These were the first of some 8,000 accidents throughout the war which added hundreds of pilot and observer casualties to the losses caused by enemy action.¹²

⁹ R.Barker, *The Royal Flying Corps In World War One* (London, 2002) pp.22-23

¹⁰ M Baring, *Flying Corps Headquarters 1914-1918* (London, 1920, 1985) pp.23-25.

¹¹ Raleigh, *TWITA*, Vol 1, p.294; Henshaw, *The Sky Their*, p.359.

¹² Henshaw, *The Sky*, p.358. Many accidents were minor, but 17% were the cause of injury or death to crew members. D. Winter., *The First of the Few*, (London, 1982), pp.156-157. Smith-Barry returned to flying as CO of 60 squadron and was later to revolutionise flying training in the RAF.

Prior to the outbreak of war, it was understood that the predominant use of aircraft would be for reconnaissance and the first operational use of aircraft in this way was on 19th August, when the first reconnaissance' flights of the war were flown. Captain P B Joubert de la Ferté of No 3 Squadron and Lieutenant G W Mapplebeck of No 4 Squadron were briefed to reconnoitre Nivelles-Genappe and Gemdloux. Neither of these flights was successful. Both aircraft got lost, Joubert landed at Tourni to get information regarding the whereabouts of the Germans, got none, took off, got lost again and landed at Courtrai for directions, before returning to base: (Maubeuge) Mapplebeck also got lost and after some wanderings he landed at Le Cateau before finding his way back to base.¹³ This was not a very auspicious start to the RFC's war. These flights had been made without observers, for the very good reason that there were few observers available. For the first few months it was usually necessary to use pilots when 'observers' were needed for reconnaissance duties. As a result, the first 'observer' to be killed in action was actually a pilot, Lieutenant C G C Bayly, shot down by ground fire when flying as an observer with 2/Lt V Waterfall (No 5 Sqn) on 22nd August 1914.¹⁴ Earlier the same day one of the few observers in France became the first RFC casualty in action when Sergeant-Major D S

¹³WITA Vol I pp.299-300; Barker p.34.

¹⁴ C. G. Jefford, *Observers and Navigators* (London, 2001) p.7; Henshaw, *The Sky*, p.3; Barker *The Royal Flying Corps in World War 1* states on p.61 that Waterfall survived to become a POW, but Casualty Card notes death accepted for both on 16th September. *RAF Museum Casualty Cards* C G C Bayly & V Waterfall.

Billings of No 2 Squadron, was wounded in the leg by a rifle bullet, when flying as an observer with Lieutenant M W Noel.¹⁵

In the first six months of war, there was a small but constant wastage of both aircraft and aircrew through enemy action (ground fire) and accidents, but there were at first few acts of aggressive or hostile action between of the RFC and the German Air Force. The first such act by the RFC was on 22nd August, when a two-seater German Albatros was spotted over the RFC airfield at Maubeuge. Three RFC aircraft took off to chase it, two BE2s and a Farman; none got near it, but Lt Strange in the Farman carried an unofficially mounted Lewis Machine gun, which his observer used to fire a few rounds after the German aircraft.¹⁶ The next action, this time successful, was a few days later the 25th August when Lts Wilson and Rabagliati flying on a reconnaissance flight saw a German Taube. Wilson immediately gave chase, while Rabagliati stood up in the rear cockpit and fired his rifle at the German. The German pilot although not hit, immediately landed beside a British Army column.¹⁷ Later the same day a Number 4 Squadron crew forced down a second German aircraft.

As noted, the Army's retreat from Mons was the cause of a series of moves by the RFC, from one makeshift landing ground to another, including stops sometimes for a few hours only, at St Quentin, La Fere, Compiègne. Senlis, Jilly,

¹⁵ Raleigh, *TWITA* Vol I pp.301-303.

¹⁶ Raleigh, *TWITA* Volume 1 pp. 310-312; Henshaw, *The Sky*, p. 3.

¹⁷ G. Norris, *The Royal Flying Corps A History* (London,1965), p.58; Barker, p.9.

Serris and Melun.¹⁸ The work of the ground crews in keeping aircraft serviceable to fly under these conditions was remarkable, indicating high morale on the ground as well as with the aircrew. The threat from German aircraft was minimal and the only concern of the pilots and observers was that some reports by aircraft of enemy positions had been disbelieved by GHQ. That situation changed during the retreat from Mons. The British first division had been marching towards Mons intending to launch an offensive, unaware that the French on their right flank were withdrawing. This fact had been reported to GHQ by aircraft but was disbelieved. Fortunately, a further series of aircraft messages reporting the advance of the German second corps westward and showing British forces moving into a trap were accepted and the planned offensive cancelled.¹⁹

From Mons to the end of 1914, reconnaissance flights were continually requested by GHQ and as confidence in results grew there was increased pressure on squadrons to fly despite bad weather and a greater risk of accident. With the growing importance of aircraft reconnaissance, particularly with the introduction of photographic coverage, it was realised by both sides that the enemy must be prevented from interfering with friendly operations and stopped from conducting its own reconnaissance. As the trench lines became established, aircraft co-operation with the Artillery became important and throughout 1915

¹⁸ *AP 125 The Royal Air Force*, pp 26-27; Henshaw, *The Sky*, pp.4-5.

¹⁹ Raleigh, *TWITA* Vol I, pp.316-320 ; Winter, *The First*, p.55.

and early 1916, methods of working with the guns were developed.²⁰ The development of trench lines and static warfare meant that aircraft had to continually cross the lines, sometimes at lower levels, which meant coming under heavy ground fire: often from both sides. The loss of an RFC aircraft to ‘friendly fire’ was the catalyst for the introduction of a roundel of red, white and blue, used by the RAF ever since.²¹ The somewhat primitive, but ever more determined, attempts by both sides to attack enemy aircraft had made it obvious that the better protected an aircraft was, the less chance it could be prevented from carrying out its task. This was recognised after only one month of fighting by the RFC commander in France Maj-Gen Henderson, who wrote to Lt Col Brankner, Director-General of Military Ordinance:

There are no aeroplanes with the Royal Flying Corps really suitable for carrying machine guns; grenades and bombs are, therefore at present more suitable. If suitable aeroplanes are available, machine guns are better undoubtedly. Request you endeavour to supply efficient fighting machines as soon as possible.²²

It was understood, that to be effective, the gun should be so placed as to fire forward and that meant that a ‘pusher’ type aeroplane (where engine and propeller were behind pilot and observer) was best suited for arming. The only available aircraft in 1914 which met these requirements was the Maurice Farman II which, as already noted, had not been considered suitable for operational work.

²⁰ Jones, *TWITA* Vol II, pp.84-87.

²¹ Henshaw, *The Sky*, p. 6. On 12th October Lt Hoskings and Capt Cream were shot down and killed even though there was a British ensign painted on the wings of their aircraft. It seems the ensign looked not unlike a German black cross. Raleigh, *TWITA* Vol I p.48.

²² Raleigh, *TWITA* Vol I p.412; E Ash, *Sir Frederick Sykes and the Air Revolution 1912-1918* (London, 1999) p.58; Norris, *The Royal*, p. 63.

Nevertheless, the first aircraft to arrive in France adapted for air fighting, were Maurice Farman pushers of No 4 Squadron flown to France in September 1914.²³ These aircraft, with a Lewis Gun fitted to the front cockpit, were involved in a few combat actions, but were too slow and cumbersome to achieve any success.²⁴ By the summer of 1915 some aircrew were beginning to feel the strain of operational flying even though combat in the air was still comparatively rare. On the other hand, with the front stabilised and anti-aircraft fire getting better organised and with heavier calibre guns, flying over or near the front line was getting ever more dangerous, especially at low level. Lt William Read of No 3 Squadron one of the pilots who went to France in August 1914, wrote:

I wonder how long my nerves will stand this almost daily bombardment by 'archie', I notice several people's nerves are not so strong as they used to be, and I am sure 'archie' is responsible for a good deal. I would not mind so quite so much if I were in a machine that was fast and that would climb a bit more willingly. Today we both had a good dressing down by 'archibald' and some of the shells burst much too near and I could hear the pieces of shell whistling past—and they have to burst very close for one to be able to hear the shrieking of loose bits of shell above the noise of one's engine. Well, well I suppose the end will be pretty sharp and quick if one of archie's physic-balls catches one. I think I would rather it caught me than crumple up Henri, because one would have too long to think when falling from 4,000 feet.²⁵

Other aircrew were also showing the effects of continuous operational flying.

2/Lt Louis Strange, one of the original No 5 Squadron Pilots, wrote:

After a long day flying you feel you have had enough and don't ever want to go up again, but after a day's rest you are as keen as ever.²⁶

²³ Jones, *TWITA* Volume II p.136; J. W. Taylor, *Jane's Fighting Aircraft of World War One* (London, 1919, 1990) pp.111-113.

²⁴ Jones, *TWITA* Vol II p.136.

²⁵ N. Steel & P. Hart, *Tumult in the Clouds; The War In The Air 1914-1918* (London, 1997) pp. 55-56. 'Archibald' was the RFC nickname for German Anti-Aircraft fire, seemingly after a popular music hall song of the time. It was in May 1915 that the first RFC aircrew were diagnosed with Neurasthenia, RAFM CC ,F Dunn, A Ferris, E R Manning. F J Gilbertson

²⁶ R Barker, *The Royal Flying Corps in World War 1* (London, 1995) p.53.

When and how aircrew should be rested was decided by squadron commanders, who until 1918, were barred from flying on operations themselves, although some ignored this order. This rule meant in practice that it was the flight commander who was more able to judge a pilot or observers' condition. He was usually a captain, he led the operational flights and was most aware of the performance of pilots and observers in the air and who knew when crews turned back early from a flight, if there was a genuine reason (eg engine problems) or not.

After six months of service in France and almost continual flying there were undoubtedly aircrew who were showing signs of combat stress, but unlike Read and Strange did not admit or perhaps even recognise the fact. Arrangements for rest and leave were haphazard and unless a man reported sick, he continued to fly. To report sick, he had to report to a brigade Medical Officer. The medical establishment for RFC units was for wings, one sergeant and seven privates RAMC, for Wing Headquarters, one Corporal and one private and for squadrons, one private. It was not until 1918 that a medical officer and an ambulance was provided at each wing.²⁷

Read noted that he had flown 14½ Hours in five days and needed a rest, but it was not up to him to decide. It was not only 'Archie' which caused anxiety, but unreliable engines, bad weather and the effects of continual exposure to wind and

²⁷ W. G. Macpherson, *Official History of the Great War, Medical Services General History: Volume II - Medical Services on Western Front 1914-1915* (HMSO, 1923) pp.111-113.

rain in the open cockpits of their still primitive aircraft and when aircraft became capable of high-altitude flight, the effects of lack of oxygen.²⁸ All these factors, often added to by 'pilot error' by still inexperienced and often inadequately trained pilots, contributed to a very high accident rate. Between August 1914 and December 1915, there were 43 serious accidents, killing 20 aircrew and injuring 14 more.²⁹ All this added to the stress of operations as did increasing losses to anti-aircraft fire and air combat.

In 1915 the first case of a pilot removed from flying suffering psychiatric symptoms, was Captain F J Gilbertson, who had transferred from the Durham Light Infantry to the RFC. On 26th May he was diagnosed with Neurasthenia, but after two weeks rest, he was discharged 'back to duty'. He continued flying until June 1916 when he went into hospital at Etaples (24 General Hospital) with Pyrexia (fever): again he was discharged back to duty, but in Feb 1917, he was again in Hospital 'Not Yet Diagnosed Nervous' and was not finally discharged until October 1917, and did not return to the front.³⁰ Psychiatric and psychological symptoms arising from 'combat stress' in air operations were new to the army medical services and both diagnosis and treatment was uncertain.

Lt A Ferris, of the Irish Rifles, attached to the RFC, was sent to the London Hospital at Millbank suffering from Debility on 17th June 1915, but within a few

²⁸ Barker, *The Royal Flying Corps*, p.50. The effects of lack of oxygen on aircrew performance are described in Chapter Eight below.

²⁹ Henshaw, *The Sky Their*, pp.359-363.

³⁰ *RAF Museum Vault, Casualty Card-Personal F J Gilbertson* (hereafter noted as RAFM Casualty Card)

days he was returned to duty as fit to fly. However, on 27th October 1916 he was sent back to England suffering from Neurasthenia. This time he was noted as a 'serious' case and was not finally discharged from hospital until 1921.³¹ The outcome of the case of Lt Edye Rolleston Manning, formerly of the 15th Hussars, now with 23 Squadron RFC, admitted to No 4 General Hospital on 17th August 1915, suffering from Neurasthenia and debility, was very different. After a few days rest he was discharged to duty on 30th. Although he was wounded in June 1916, he went on to win the Military Cross in 1917, survived the war and was granted a permanent commission in the RAF. In 1928 as Commanding Officer of No 6 Squadron, involved in the evacuation of the British High Commissioner from Suliemanich in Kurdistan, he was awarded the Distinguished Service Order. In 1941, he Commanded No 221 Group in Burma and in 1945 he retired as an Air Commodore having been awarded the CBE.³² Manning's subsequent career shows that he was if anything a stronger character than average and yet he suffered a war neurosis after a few months service at a time when casualties were light and contacts with enemy aircraft few.

Although there were few examples of aircrew breakdown in 1915 (5), they were an early indication that aircrew were feeling the stress of the increased level of operations even though morale on the squadrons was still high, casualties were not excessive and one positive factor was the knowledge that the work on the

³¹ *RAFM Casualty Card* A Ferris

³² *RAFM Casualty Card* E R Manning; *London Gazette Supplement* 7237, 17th July 1917 & 37124 8th June 1945; J Grehan & M Martin, *Far East Air Operations 1942-1945* (London, 2014) pp.1-4.

RFC was appreciated. This was confirmed by a dispatch from the BEF Commander Sir John French, on 29th November 1914, stating ‘The work being performed by the RFC has continued to prove of the utmost value to the success of operations.’³³

At about the time of this dispatch, the RFC’s Commander Maj-Gen Henderson, was appointed to command 1st Division of the BEF, leaving Lt Col Frederick Sykes (Chief of Staff) in temporary command. Henderson was soon restored to the RFC command on Kitchener’s instructions and he then offered the post of Chief of Staff to Trenchard, at that time Commanding No 1 Wing. Trenchard had refused that offer but when Henderson promoted to Lt-General, left for the second time to concentrate on his role as Director of Military Aeronautics, and Sykes was posted to the Admiralty to organise RNAS operations at Gallipoli. Trenchard was then offered and accepted the appointment of Commander of the RFC in France and he took up this post on 15th August 1915.³⁴

His immediate introduction of an all-out offensive policy was what he had already advocated as No 1 Wing Commander in France and what he felt to be the answer (notwithstanding inevitable casualties) to the introduction by the German Air Force in August 1915, of the Fokker monoplane. This aircraft was fitted with a machine gun, which by means of an interrupter device could fire through the

³³ AP 125 *The Royal Air Force*, p.32.

³⁴ Jones, *TWITA* Volume II p.124; Boyle, *Trenchard* p.141; E Ash, *Sir Frederick Sykes and the Air Revolution 1912-1918* (London, 1999) pp.66-67; M. Cooper., ‘A House Divided, Policy, rivalry and administration in Britain’s Military Air Command 1914-1918’ *Journal of Strategic Studies*, 1980. 3 (2) pp.178-202, p.185.

propeller, giving it a significant advantage over the current RFC aircraft. The interrupter device simplified the great problem of air fighting, that of allowing for deflection. With the gun synchroniser fitted, essentially all the pilot had to do, was point his aircraft at his target and get close enough for his gun(s) to take effect.

The influence of the Fokker fighter began to take effect towards the end of the battle of Loos in October 1915. The introduction of this aircraft coincided with the appearance of two exceptional German fighter pilots, (Max Immelman and Oswald Boelke) who revolutionised air fighting. The Official History vividly describes how the aircraft/pilot combination worked:

The Fokker pilot would cruise at great heights over the German lines and await the passing of suitable victims. He would then swoop down from behind, coming when possible out of the sun so that his opponent might have no warning before he was startled by the rattle of a machine-gun. One long burst of fire came from the Fokker as it dived past, the dive being continued well out of range. If the British machine was not shot down and persisted in its work, the German pilot would climb again and repeat his swift diving attack. Then came the famous manoeuvre, introduced by Lieutenant Max Immelman, which made it possible for the Fokker pilot to strike again and again without loss of time. In the Immelman turn the aircraft rears up as if to loop, turns sideways over the vertical, and then comes out in the opposite direction. This manoeuvre, in which height is gained at the same time as direction is changed, took the British pilots by surprise and added to the losses which the Fokker inflicted.³⁵

The increase in RFC casualties which followed the introduction of the Fokker, with its superiority over any RFC aircraft, was exacerbated by the offensive policy of Trenchard. His guiding principle was that the RFC was part of the

³⁵ Jones, *TWITA* Vol II p.150 (Jones had been an RFC pilot in the First World War which may have helped this convincing account)

British Army and no call from that Army must ever find the RFC wanting.³⁶

Even more significant, was his insistence that the RFC should attack the GAF on the German side of the lines, as, firstly, this would prevent effective reconnaissance by the Germans, but equally importantly, would establish air superiority. For the rest of the war the British air service maintained the doctrine of offence, designed to ensure that the RFC's army co-operation aircraft could operate without enemy interference.³⁷

This should be achieved as soon as possible and then retained at any cost. The inevitable cost of this policy was an increase in casualties: the still ill-equipped RFC aircraft (although some BE2s were fitted with Lewis machine guns) were no match for the Fokker and losses increased. Trenchard's 'offensive at all times' policy resulted in an additional (not always recognised) problem for RFC aircrews. The prevailing wind over northern France is westerly, in the winter sometimes reaching 60/80 mph. In these conditions fighting over or beyond the German lines meant that RFC aircrew suffering engine failure or battle damage found that it was sometimes impossible to glide far enough against the wind to reach British or French lines. This wind factor was one reason why many RFC aircrew became Prisoners of War, even though they could survive a forced landing. In any event, bearing in mind that few aircraft could exceed 100 mph,

³⁶ Jones, *TWITA*, Volume II, p.24, Barker, p.187; S. F. Wise, *Canadian Airmen in the First World War. The Official History of The Canadian Air Force*, Vol 1, p.351.

³⁷ D. Jordan, 'War in The Air: The fighter Pilot', P Liddle, J Bourne and I Whitehead (eds.), *The Great World War 1914-1945* (London, 2000), p.81.

drifting to the east during any combat even without any battle damage, often meant a sometimes lengthy and worrying return flight.³⁸

The increased casualties caused by the introduction of the Fokker and the early results of Trenchard's policy were undoubtedly responsible for a lowering of in morale, as casualties increased steadily, although Jones argues that the Fokker's effect on RFC morale was greater than its actual results justified.³⁹ Nevertheless, the losses to the Fokker were significant and continually increasing.

In June 1915, the casualty figure (killed or missing) was six, in July when the first 'new' Fokker appeared fifteen, in August ten, in September fourteen and in October twelve. In November and December bad weather much reduced the number of sorties carried out by all RFC squadrons, but despite this the casualty figures increased to sixteen and seventeen respectively.⁴⁰ In January 1916, when the 'Fokker Scourge' was at its height thirty aircrew were lost and Headquarters RFC became concerned an apparent lack of aggression by pilots. Trenchard personally expressed his concern, having seen four combat reports which showed pilots breaking off combat and retiring, often an indication of loss of confidence and morale.⁴¹ He also noted 'pilots are not good at describing their combats'.

Although the number of RFC squadrons in France had grown to 26, the Fokkers maintained their supremacy and the German Aces Boelcke and Immelman were

³⁸ Jones, *TWITA*, Vol II pp.153-154.

³⁹ Jones, *TWITA* Vol II, p.150.

⁴⁰ Henshaw, *The Sky Their Battlefield*, appendix 3, p.347; Wise, *Canadian Airmen*, p.355.

⁴¹ Wise, *Canadian Airmen*, pp.355-6; Jones, *TWITA* Vol II pp.456-9, casualty summary; Boyle, *Trenchard* p.156; M K Wells, *Courage in Air Warfare* (London, 1995), pp.104-105; Henshaw, *The Sky Their*, app 3, gives the casualty figure as twenty seven.

able to extract the greatest potential from the aircraft and as already noted above develop new tactics. All this was accomplished with a total of only 50 Fokker Monoplanes on the Western Front.⁴²

By January 1916, long reconnaissance by RFC aircraft was becoming impossible. This was confirmed by the events of 12th January 1916. On this day attempts were made to complete several reconnaissance's requested by the Army. Results were disastrous; a GHQ Morane flight to Ghent failed, the escorting aircraft being shot down. A Vickers fighter sent out to escort a reconnoitring aircraft to Cambrai, failed to return.⁴³ Obviously a change of tactics was required and on 14th January 1916, the following order was issued:

Until the Royal Flying Corps are in possession of a machine as good as or better than the German Fokker it seems that a change in the tactics employed becomes necessary. It is hoped shortly to obtain a machine which will be able to successfully engage the Fokkers at present in use by the Germans. In the meantime, it must be laid down as a hard and fast rule that a machine proceeding on reconnaissance must be escorted by at least three other machines. These machines must fly in close formation and a reconnaissance should not be continued if any of the machines become detached. This should apply to both long and short and distant reconnaissance's. Aeroplanes proceeding on photographic duty any considerable distance east of the line should be similarly escorted. From recent experience, it seems that the Germans are now employing their aeroplanes in groups of three or four and these numbers are frequently encountered by our aeroplanes. Flying in close formation must be practised by all pilots.⁴⁴

This order obviously emphasised the problem of 'the Fokker Scourge', a description first used during a House of Commons speech, very critical of the Government's handling of the air war by Noel Pemberton-Billing, a former successful RNAS pilot, who had resigned his commission to stand for and be

⁴² J. Morrow., *The Great War in the Air* (London, 1993) pp. 106-106.

⁴³ *AP 125 The Royal Air Force*, p.113.

⁴⁴ *AP 125 Royal Air Force*, p.114; Boyle, *Trenchard* p.162.

elected to parliament, and who was recognised as an expert on air matters.⁴⁵

The phrase had been taken up by the press and used in conjunction with Pemberton-Billing's accusation that "*Britain's gallant air officers were being murdered*" because the RFC was operating outdated aircraft with inadequately trained pilots.⁴⁶

The deleterious effect on morale of the heavy casualty rate was confirmed by pilots operating over the front. Cecil Lewis noted, referring to the Fokker:

Early in 1916 the Fokker was the menace of the RFC. Hearsay and a few lucky encounters had made the machine respected, not to say dreaded, by the slow, unwieldy machines then used by us.....Few having been attacked by it came back to tell the tale;.....In short our morale needed bucking up.⁴⁷

Ira Jones confirms Lewis's view, he said:

The Fokker had superiority over the BE. With its synchronised gun gear, it was a fast, good climbing, strong structured, highly manoeuvrable aeroplane-all essential qualities of an efficient fighting machine. When flown by such masterly determined pilots as Boelke and Immelmann, it was almost invincible.⁴⁸

Although RFC morale was badly affected in the winter of 1915-1916, it had recovered somewhat by the early summer of 1916. The Fokker supremacy had lasted only until the introduction of three new aircraft by the Allies. The French produced the Nieuport Fighter, which had a better performance than any contemporary aircraft. It could reach 10,000 feet in ten and a half minutes and

⁴⁵ He had planned and carried out a brilliant raid on Zeppelin sheds.

⁴⁶ Morrow, *The Great War* p.177-8; Barker, *The Royal Flying Corps*. P.144, notes that in fact Pemberton-Billings principal complaint was the ordering of too many BE2s.

⁴⁷ C. Lewis. *Sagittarius Rising* (London, 1936, 1993) p.53.

⁴⁸ I. Jones, *Tiger Squadron* (London, 1954) p.41.

was ten miles an hour faster than any RFC aeroplane.⁴⁹ By early 1916 Nieuport Fighters were being flown by Nos 1 and 11 Squadrons of the RFC At about the same time (February 1916) the RFC introduced two new aircraft types, the De Haviland Scout (DH2) a single seat fighter and the FE2b a two-seater fighting reconnaissance aircraft. The first DH2 squadron was No 24 and FE2b's were allocated to Nos 20 and 25 Squadrons. The consequent improvement in the RFC's fortunes over France was summed up by General Sir Henry Rawlinson, Commanding Fourth Army on 23rd May 191:

For the moment at any rate, we have command of the air by day on the Fourth Army front. I cannot speak too highly of the work of these young pilots, most of whom have recently come out from England, and the de Haviland machine has unquestionably proved itself superior to the Fokker in speed, manoeuvre, climbing and general fighting efficiency.⁵⁰

The fighting strength of the RFC in France was further enhanced with the arrival on 24th May of No 70's first flight of Sopwith Fighters, (fitted with interrupter gear, enabling guns to be fired through propellers, in addition to the Observer's Lewis Gun.) All three-aircraft proved to be able to outfight the Fokker. The result of these changes vastly enhanced fighting ability and morale, just in time for the battle of the Somme.

However, even before the Somme battle with its great increase in workload and casualties, the stress of air warfare on the RFC crews was showing. Some were finding it difficult to sleep or would have nightmares, or become irritable, more

⁴⁹ Jones, *TWITA*, Vol II p.161; *Jane's Fighting Aircraft*, p.119.

⁵⁰ *AP 125 The Royal Air Force*, pp.114-115.

seriously many would be careless in the air risking even more accidents.⁵¹

Another sign of combat stress was the increase consumption of alcohol by aircrew, it was alleged that some pilots could no longer fly sober.⁵² A common experience was having nightmares, often involving burning aircraft. Ira Jones, a successful pilot, wrote:

Had a terrible nightmare last night. Jumped out of bed eleven times though I tried to stop myself by tying my pyjama strings to the bed ... It was the usual old business, chiefly of being shot down in flames and jumping out of my plane.⁵³

During the first six months of 1916 seven aircrew were diagnosed with war related psychiatric conditions, including one serving in the United Kingdom and one in the Middle East. Of the five serving in France, Captain P G Marr of No 22 Squadron was diagnosed on 29th May 1916 as suffering from debility due to flying and sent to hospital in UK.⁵⁴ He was the first of thirteen officers of this squadron to be removed from operations following psychological disorders between February 1916 and November 1918. Marr's squadron No 22, had arrived in France on 1st April 1916 and had been incorporated into 14th (Army) wing on 4th April.⁵⁵ It had been engaged in offensive patrols protecting the army corps operating between Douchy and Miraumont but up to the time of Marr's diagnosis there had been no casualties on the squadron.⁵⁶

⁵¹ Barker, pp.196-197; V M Yeates, *Winged Victory* (London, 1934, 2004) p.120.

⁵² J. Hamilton-Patterson, *Marked for Death* (London, 2015) p.165. Quoting W E Johns, the author of 'Biggles' books who was a First World War pilot in France.

⁵³ Ira Jones, *Tiger Squadron* (London, 1954) p.161.

⁵⁴ *RAF Casualty Card* P G Marr. He did not return to operations, but did fly again in 1918 (when he was injured in an accident)

⁵⁵ *AP 125 The Royal Air Force*, p.120; C. G. Jefford, *RAF Squadrons* p.34.

⁵⁶ Henshaw, *The Sky Their*, pp.35-41.

Another officer admitted to hospital in early 1916 was Captain B E Baker, No 28 Squadron. As in the case of Lt Eyde Manning, noted earlier, he gave very good service before finally breaking down. On 8th February 1916, he was admitted to La Treport Hospital apparently suffering from jaundice. By 19th March, he was diagnosed with Neurasthenia and sent home, where he was admitted to No 8 London Hospital. However, he recovered and was returned to duty and by 1917 was back in action with No 48 Squadron. On 17th July, No. 48 Squadron were ordered to intercept a formation of Gothas returning from a raid on England. They caught the Gothas over the sea off Ostend and during the action Captain Baker and Lt G R Spencer shot one down, which crashed into the sea,⁵⁷ On 24th July 1917, Captain Baker's Observer was wounded by anti-aircraft fire in a reconnaissance flight and on 27th July they shot down a German aircraft (Albatros). By this date Baker had been awarded the Military Cross.⁵⁸ Sadly, on 11th February, Baker was admitted to No 24 General Hospital, Etaples, suffering from Debility. He was not able to return to duty before the end of the War.

Baker's experience emphasises the point that many of those who did breakdown served as well and sometimes better than the average flyer. As one army psychiatrist wrote:

...There is official evidence to show that in a very large proportion of cases, before the breakdown, the man has done credit to himself and his unit. Against overwhelming mental forces calling him to abandon his to fight on, he has frequently carried on. In fact, the

⁵⁷ Royal Flying Corps Communique No 98, 21-27 July 1917.

⁵⁸ *RAFM CC B. E. Baker*; Henshaw, *The Sky Their*, pp.104-105

proportion of men with neurosis who received decorations for valour showed little difference from the proportion of other soldiers who received decorations.⁵⁹

By March 1916 there were twenty-seven RFC squadrons in France, some equipped with newer generation aircraft such as Moranes (60 Sqn), Martinsyde Scouts (27 Sqn) and Vickers Fighter (18 Sqn).⁶⁰ Concurrent with this increase of strength and partly because of the experience of 15 months of operations, on 29th of November 1915 the RFC squadrons were decentralized into Wings, with the 1st Wing allocated to Haig's First Army and 2nd Wing to Smith-Dorrien's Second Army. Each Wing consisted of two to four squadrons with the RFC Headquarters at St Omer retaining No 4 squadron with its wireless flight.

However, the expansion of the RFC and the recognition that the needs of the army could be divided by function into main kinds of work, led to further changes. The armies required, artillery co-operation, photographic work and tactical reconnaissance on the immediate front of each army corps and additionally, air fighting, distant reconnaissance and bombing beyond the area covered by the corps. This led to a further reorganisation of the wings in 1916.⁶¹ They were recognised as either Corps wings or Army wings and grouped to form Brigades one for each Army. Each brigade consisted of a headquarters, an aircraft park, a balloon wing, an army wing of two to four squadrons, and a corps wing of two to five squadrons.

⁵⁹ E. Miller, *The Neurosis in War*, (London, 1940), pp.13-15.

⁶⁰ Jones, *TWITA* Vol II p.147.

⁶¹ Jones, *TWITA* Vol II p.111.

General Sir Henry Rawlinson's Fourth Army, which was to deliver the main attack in the Somme offensive was supported by IV Brigade (Brig-Gen E B Ashmore), consisting of 3rd (Corps) Wing and 14th (Army) Wing, making a total of eight squadrons plus No 1 Kite Balloon Squadron (Nos 1 & 2 Sections) ⁶² At RFC headquarters, there was an additional wing to provide reconnaissance for GHQ. ⁶³

This, the last major change in the RFC organisation started on 30th January 1916, was completed in time for the Battle of the Somme. ⁶⁴

The Somme offensive was intended to end the stalemate in the trenches and was to achieve a decisive breakthrough. Additional objectives were to relieve the pressure of the German attack at Verdun and to prevent further transfers of troops from the Western Front to Russia. Considerable difficulties had been experienced in agreeing with the French the final objectives of the Somme campaign, but one common aim was the that in the longer term, as part of the overall policy of attrition, the battle was to contribute to the wearing down of the enemy's strength. ⁶⁵

Following the introduction of the higher performance aircraft the RFC had gradually overcome the Fokker and regained at least a temporary air supremacy.

This together with the changes in organisation and the increase in squadron

⁶² For work of Kite Balloons, and effects on crews see below, appendix to this Chapter

⁶³ S. F. Wise, *The Official History of the Canadian Air Force Vol I Canadian Airmen in the First World War*, p.349

⁶⁴ Jones, *TWITA* Vol II, pp 148-149; *AP 125 The Royal Air Force*, pp.111-112.

⁶⁵ A. Watson, *Ring of Steel* (London, 2014) pp,310-326; W. Philpott, *Bloody Victory*, (London, 2009) Chap 3 p.89; *AP 125 The Royal Air Force*, p. 122; Barker, *The Royal Flying Corps* p.141.

aircraft strengths from 12 to 18 aircraft (from March 1916) had been responsible for a considerable improvement in morale.⁶⁶ Additionally, RFC morale was certainly improved when Immelmann was killed on the 18th June.⁶⁷

The Somme offensive would depend upon air superiority, which as Philpott points out was a new tactical concept.⁶⁸ This concept was implicit in Trenchard's 'offensive policy' which had been in place since October 1915. However, during the Somme offensive the implementation of this policy needed to be extended beyond the protection of British air space and fighting the GAF over German lines.⁶⁹ In the event, not only did the RFC protect their own aircraft carrying out reconnaissance and artillery spotting but carried aggressive fighting patrols to engage enemy fighters and RFC aircraft bombed targets well behind the enemy lines and used aircraft to attack the German trench lines. This last activity grew out the use of 'contact patrols' flown at low levels over the trench lines and beyond, intended to keep the command in touch with the movement of their own troops during a battle. This was first used in the battle of Neuve Chapelle in March 1915, when an aircraft of No 3 Squadron was sent to locate the line of battle.⁷⁰ By the time of the Somme, procedures for identification of Army units had evolved (infantry signalling positions with flares or lamps, and

⁶⁶ AP 125, *The Royal Air Force*, p.120.

⁶⁷ Jones, *TWITA Vol II* p.202.

⁶⁸ W. Philpott, *Bloody Victory* (London, 2009) p.268.

⁶⁹ A German account of the battle notes the British 'airman above the battle...have exactly located every one of our batteries and smashed them up' in R. B. Asprey, *The German High Command At War* (London, 1993), pp.245-247.

⁷⁰ Jones, *TWITA Volume II* p.97.

aircraft reporting by wireless).⁷¹ It was a natural progression from reporting to attacking the enemy: however, casualties in these operations were very high sometimes as many as 30% of aircraft dispatched.⁷²

The RFC started the battle with some 167 aircraft supporting Fourth Army (with possibly 210 French aircraft operating over the French sector) and some 129 German aircraft were available to the Germans.⁷³ In the event these figures were constantly changing. Losses on both sides required continuous reinforcement and replacement of aircraft and aircrew. Then RFC's battlefield reconnaissance performance at the start of the battle was poor, partly due to the complexity of the fighting, but also because of the inexperience of the crews, but by the end of the campaign the RFC had with experience, and RFC mastery of the air, had become efficient and useful.⁷⁴ Nevertheless, air supremacy had come at great cost in aircrew. Trenchard understood the likely adverse reaction of aircrew to heavy casualties and instituted an 'unbreakable rule' that casualties should be replaced on the very day a pilot or observer failed to return. He described this as a policy of 'no empty chairs in the mess'⁷⁵ To meet this objective, Trenchard kept a reserve of pilots at St Omer, (Observers are not mentioned) which seems to have worked for the Somme battle, but in the intensive air war of 1917/1918, and

⁷¹ Jones, *TWITA* Volume II pp.179-8.

⁷² Jones, *TWITA* Volume II p 239. J. Hamilton-Paterson, *Marked For Death*, (London, 2015) pp.102-105; Barker, p.223; F M Cutlack. *The Australian Flying Corps volume VIII, The Official History of Australia in The War of 1914-1918* (AWM, 1923,1984) pp.294-295; G. Norris, *The Royal Flying Corps* (London, 1965) pp.165-167.

⁷³ Jones, *TWITA* Volume II pp.200-201; A Watson, *Ring of Steel*, p.313.

⁷⁴ Wise, *Canadian Airmen* pp.372-373.

⁷⁵ Boyle, *Trenchard* (London,1962) p.190.

consequent very large casualty numbers, it took three/four days to get replacements to squadrons.⁷⁶

Trenchard's offensive tactics had increased the intensity of air fighting to a new level which was costly in casualties for both sides; for the RFC, as most of the losses were beyond the German line POWs made up a significant part of the losses.⁷⁷

The battle of the Somme opened on 1st July 1916. At the start of the battle the RFC enjoyed air superiority. The role of the fighter squadrons of the 14th (Army) wing was to protect the corps aircraft of 3rd (Corps) Wing as they carried out their tasks of artillery co-operation. Reconnaissance, photography and bombing. The corps squadrons were also engaged in contact patrols, intended to keep GHQ in touch with the progress of the advance.

On this first day a crew of No 9 Squadron, carried out a notable contact patrol. Captain J T Whittaker and 2/Lt T E Gordon-Scaife (Obs), operating over XIII corps attacked and shot up a machine gun post, they then attacked German troops nearby and then flew along the lines waving and reviving return waves from the advancing troops.⁷⁸ It was also on this day that Major L W Rees, Commanding Officer of No 32 Squadron (disregarding orders not to fly) was awarded the

⁷⁶ Jones, *TWITA* Volume V pp.424-430.

⁷⁷ T. Henshaw, *The Sky Their Battlefield* (London, 2014) pp.46-52. In August 1916, RFC aircrew casualties were 27 KIA, 22 WIA and 18 POW, there is a little overlap as some POW afterward died in captivity, and some WIA in France later died of wounds.

⁷⁸ Henshaw, *The Sky*, p.41.

Victoria Cross, when although wounded attacked four enemy aircraft, destroying three.⁷⁹

By the end of the first phase of the battle on 17th July, the RFC had delivered on all its tasks and had learnt some important lessons. On 3rd July, 13 Squadron lost two BE2cs flying without escort, two other squadrons also lost aircraft on unescorted bombing raids. The Commanding Officer of 13 Squadron, Major E W Powell, wrote:

Experience has shown that that hostile machines avoid Allied machines flying in formation and attack isolated machines. This increases the likelihood of being attacked when the patrol is not at hand.⁸⁰

This warning seems to have been heeded as by the end of the first phase of the battle (17th July), only three corps aircraft were lost to air fighting whilst carrying out reconnaissance or co-operational duties. Total RFC casualties at the end of the first phase were 40 killed in action, 38 wounded and a further 26 became prisoners of war.⁸¹

The second phase of the battle began on 23rd of July with a general British attack after two days of artillery bombardment along the whole front. Bad weather prevented full RFC co-operation with the ground forces although reconnaissance by No 4 Squadron could report on some new German entrenchments. Although the weather caused only a temporary interference to air operations the new attack

⁷⁹ Jones, *TWITA* Vol II p.332. Trenchard had decreed that RFC Squadron Commanders should not fly over enemy lines, for the good reason that losing a Squadron CO would involve great loss of experience, which certainly could not easily be replaced ;N. Franks, *Dog Fight, Aerial Tactics of WW1* (London, 2003) pp.87-88.

⁸⁰ Jones, *TWITA* Vol II Appx II; Henshaw, *The Sky*, p.43.

⁸¹ Henshaw, *The Sky*, pp.42-45.

coincided with a major change in the air situation. The RFC had been strengthened on the 15th July, when No 34 Squadron (CO Major J E Chamier), equipped with BE2e arrived to join IV Brigade supporting Fourth Army.⁸²

At this time, on the German side, General Von Bellow's First Army was reinforced by no fewer than six new and improved air units. They consisted of the new reconnaissance flights of six aircraft each, on artillery flight of four aircraft, one fighter squadron of 36 aircraft, and one bomber flight of eight aircraft. Additionally, transferred from the German Second Army were two reconnaissance flights of 15 aircraft, two artillery flights of eight aircraft and a bomber/fighter squadron of 48 aircraft. And on the 19th another fighter squadron was formed from with aircraft drawn from other units with 12 aircraft.⁸³

The arrival of these reinforcements was a serious challenge to the RFC, which became more dangerous with a German change in tactics. With the added aircraft, the GAF could maintain patrolling with large formations (sometimes up to 30 aircraft), which would attack RFC Reconnaissance or spotting aircraft and aim to overwhelm any escort. It was this tactic which led to the mass air fights often reported. From the end of July until the close of major ground operations in November, the RFC fought a gruelling, sometimes desperate battle to gain and the maintain air superiority. The morale of the squadrons was continually

⁸² Jones, *TWITA* Volume II p.238n; pp.298-299. Of the seventeen observers attached to this squadron, fourteen were trained artillery officers, and its pilots had received extra training.

⁸³ E. R. Hooton, *War Over The Trenches, Air Power and the Western Front* (Ian Allan, 2010) pp.103-106; Jones, *TWITA* Volume II pp.179-181.

threatened by high casualty rates and sometimes by the actions of their own commanding Officers. As already noted, CO's were commanded not to fly themselves, although many did, but their role as leaders was crucial to morale. By showing administrative competence and personal support, the Commanding Officer could be (as he should) a positive factor in a squadron's morale. As one No. 5 squadron pilot pointed out during the Somme battle:

When I first joined 5 squadron, there was a very efficient Squadron Commander called Major Hearson. He was a regular Engineer officer and he wasn't a very good pilot.....But he was very efficient indeed- very particular about the way we entered up our logbooks and report sheets when we came back from every flight. He saw to it that the morale of the men was good, that the maintenance of the aircraft and engines was well looked after. He was a very good squadron Commander and was eventually promoted and became a Wing Commander when he left us. Then we had another man who wasn't nearly so good. He was an ex-gunner and fonder of the drink-rather more lackadaisical and slipshod leaving things to his flight commanders rather than seeing to it himself. He was not nearly so particular about the way that pilots and observers wrote up their reports when they came back from operations.....Pilots and observers weren't so punctual to their machines when it was time to take off and there were delays. It might be a question of bad weather coming up and getting the job done before it deteriorated, so it was very important that a Squadron should see that his men are punctual. Another way was how people dressed themselves.....whether their hair was long or the had taken the trouble to dress properly for the different meals. These are little things, but they all add up.....and had an effect on the slackness of all the personnel in the squadron, right the way down from the pilots and observers down to the airmen themselves. I think it is most important that the Squadron Commander should be 100% efficient.⁸⁴

This statement emphasises the importance of the attitudes and actions of Squadron Commanders in fostering and maintaining morale on squadrons. If he flew with his crews, it boosted morale and contributed to the avoidance of psychiatric failures. The Official History of World War Two Medical Services

⁸⁴ Lt Alan Jackson P. Hart, No.5 Squadron, quoted in *Somme Success* (London, 2012) pp.66-67; N. Steel & P. Hart, *Tumult in the Clouds* (London, 1997) pp.287-288.

made this point (following a major investigation into Bomber Command Operations):

Inspired by the personal example of commanding officers, *a good esprit de corps* was shared by flying and ground personnel alike. Good leadership contributed greatly to morale, discipline and confidence. A squadron commander who would take his turn of operational regardless of the hazard or otherwise of the target was one with his crews, and in such a squadron psychological illness or “lack of moral fibre” was practically non-existent.⁸⁵

Of course, in the First World War Squadron Commanders who were not permitted to fly on operations and yet had to order others to do so, sometimes in very bad weather, were in an invidious situation. Not only did their reputation suffer, (unless like Major Lanoe Hawker VC, it had already been established) but they had less chance to learn about the war in the air themselves.⁸⁶

These two factors, added in most cases to undoubted courage, were the reasons why many squadron commanders ignored Trenchard’s instruction. He does not seem to have taken any action to enforce this order.

Although the Somme campaign is generally remembered as a disaster: from the RFC’s perspective it was a success. In the first two months of the campaign it had firstly gained and then kept command of the air not only over the lines but well beyond. But this came at a cost in casualties. Of course, the casualties sustained by the RFC were infinitesimal compared to the tens of thousands suffered by the BEF in the trenches, but as the total number of pilots and observers serving over the front in 1916 at any one time was less than 2,000, the total of

⁸⁵ S. C. Rexford-Welch, *History of The Second World War: The Royal Air Force Medical Services Vol II Commands* (HMSO, 1955) pp.131-132

⁸⁶ This problem also arose in the Second World War, see General Curtis Le May’s remarks in Chapter Three.

545 casualties (292 killed in action and 203 PoW) and many wounded) in the year was both significant and very well known to the crews. And in addition, there was the continuous stream of accidents, resulting in a further 55 deaths and many injuries.⁸⁷

Although success in the air helped to maintain morale on most squadrons despite heavy losses, some flyers were unable to cope. An example being 2/Lt E F Allen following a particularly difficult flight when he saw his observer killed in front of him. His flight commander Captain Harold Wyllie of 23 Squadron, reported:

Unfortunately, Allen completely lost his nerve, and told me today that he could not go flying. It was a terrible time for him as besides the fact of the engine gradually going worse and worse and finally stopping over the lines, the machine was in a dreadful state, covered with blood.⁸⁸

As there is no record of Allen as a casualty, it is probable that his case was dealt with administratively. Another case of a pilot being dealt with at least initially, administratively, was that of Lieutenant F L Barnard, No 18 squadron, who with his observer Lieutenant F S Rankin was involved in a series of dog-fights (air combats) in the last of which the observer was killed, he reported:

We turned for home but found one more HA on our tail. The observer put one drum into one which was passing straight over our heads at very close range and this machine immediately became out of control, the tail and back of the fuselage being on fire. It went down in spin. The remaining two HA were now firing from behind and the observer stood up to take a shot at them, one more HA was seen to go down in a nose-dive with smoke from its engine. The observer was still firing when he was hit in the head and fell sideways over the side of the nacelle. I managed to catch his coat as he was falling and by getting on the front seat pulled him back. I then got back in the pilot's seat. The engine and

⁸⁷ It has been estimated that 499 of the total 586 casualties suffered by the RFC in 1916, some 499 were over the Somme, See Hart, p.223, Wise, *Canadian Airmen*, p.376, For RFC casualties generally, TNA AIR1/844/204/5/369, TNA Air 1/845/204/5/376 and Jones, *TWITA* Vol VI Appendix XXXVII.

⁸⁸ Jones, *TWITA* Volume II pp.256-257; Henshaw, *The Sky Their*, p.38; Hart, p.70. Harold Wyllie, who had served in the Boer War and later commanded RFC squadrons in France and England, survived the war and became a noted marine artist.

most of the controls had been shot but I managed to get the machine over our lines and landed 200 yards behind our front lines.⁸⁹

Barnard was very shocked by this experience, so much so that his commanding officer Major George Carmichael, felt he had to be sent home. He wrote:

Lieutenant F L Barnard was in combat when his observer Lieutenant F S Rankin who was standing up to fire back over the top plane was hit and would have fallen out had not Barnard seized his coat and dragged him into the cockpit. He actually held him there until with almost superhuman strength and skill he brought his machine to our landing area. The observer, Rankin, unfortunately did not survive. Lieutenant Barnard was so affected by his experience that I had to arrange for his posting home, and his nerves were so badly affected that I do not think he was able to return to the Western Front.⁹⁰

Major Carmichael was right, Barnard was still in hospital in London in 1919.⁹¹

On 15th September 1916, when The Fourth Army attacked the German's third defensive line, employing for the first time an entirely new weapon, the Tank,⁹² the German Air Force introduced to the battle over France a new aircraft 'which outclassed every contemporary British aeroplane opposed to them'⁹³ The new Albatross D II, together with a considerable increase in the numbers of German aircraft at the front (formed into special fighter squadrons) immediately caused a significant increase in the RFC losses.⁹⁴ In fact, RFC casualties for 1916 were so significant that Cecil Lewis going on leave in September, noted that he had flown some three hundred and fifty hours on operations in eight months

⁸⁹ Hart, *Somme Success*, p.202; Henshaw, *The Sky Their*, p.58.

⁹⁰ Hart, p.202.

⁹¹ *RAFMC F L Barnard 1919*; Hart, p.202.

⁹² G Sheffield *Forgotten Victory* (London, 2001) pp.175-178; W. Philpot *Bloody Victory* (London, 2009) pp.361-365.

⁹³ Jones, *TWITA* Volume II p.282.

⁹⁴ Jones, *TWITA* Volume II pp.304-306. German aircraft numbers on Somme front increased from approx. 140 in July to 450 in September, Hooton, *War Over*, p.100.

(including the Battle of the Somme) and was still alive, at a time when a pilot lasted an average of three weeks.⁹⁵

In fact, aircrew losses on the western front immediately before and during the Somme campaign, showed that of the total of 586 casualties, (killed, wounded or PoW) 499 occurred over the Somme. The table below sets out the monthly totals, showing clearly the effect of the increase in German aircraft and change of tactics.

Month.	<i>KIA.</i>	<i>WIA.</i>	<i>PoW.</i>	<i>Total</i>
April	6	10	8	24
May	11	5	7	23
June	11	16	7	34
July	40	38	26	104
August	33	25	24	82
September	63	34	40	137
October	50	27	27	104
November	36	27	15	78
Total	250	162	154	586⁹⁶

During the Somme battle it seems that Trenchard began to appreciate that the full out offensive policy had a downside. As early as the first week in July after a few days of fighting he wrote to Brancker:

I have as you know, lost eight machines at low bombing. I am afraid that some of the pilots are getting a bit rattled and it's not popular. I have put in for two VCs.....We have done 1200 hours flying a day which makes you think a bit as a lot of the pilots have to do five or six hours day after day, It's a bit of a strain with so many hostile machines and anti-aircraft guns.⁹⁷

⁹⁵ C Lewis, *Sagittarius Rising* (London, 1936) p.154.

⁹⁶ Sources, E R Hooton, *War Over The Trenches* (Ian Allan Publishing, 2010) pp.100-101; Henshaw, *The Sky Their Battlefield* pp.41-60; T G Bradbeer, *The British Air Campaign During The Battle Of The Somme 1916* (Unpublished Thesis - University of Kansas 1999) pp.401-402.

⁹⁷ A Boyle, *Trenchard* (London, 1962) p.183; Jones, *TWITA* Volume II pp.296-297

There were also complaints from the front. In the first three weeks of July 9th Wing, commanded by Lt Col Dowding had lost fifteen aircraft. One of its Squadrons (No 60) had lost six aircraft and 11 aircrew, including its squadron commander and two flight commanders. Some of its replacement pilots had only about seven to ten hours flying time. The new squadron commander (Major Smith-Barry) refused to send such inexperienced pilots into battle and he was supported by Dowding. He requested that 60 squadron be returned to England for more training.⁹⁸ Trenchard reluctantly agreed but was irritated by Dowdings request and made sure he was posted home at the end of the Somme Campaign.⁹⁹ It is noteworthy that Trenchard felt it necessary in September before the attack on the 15th to gather all 9th wing aircrew together and brief them himself about the ‘big offensive’ starting next day and their part in it. Later, on 17th September he instructed Baring to visit 70 squadron (which had lost four aircraft on 15th) ‘and take out to lunch anyone who wanted a rest for a day’.¹⁰⁰

By the end the Somme campaign in November, nineteen more aircrew had been diagnosed as suffering from psychiatric illness and in most cases sent back to the UK. Second Lieutenant J E H Bibby flew over the Somme battlefield, with No. 23 squadron. In November 1916, he was admitted to a field hospital at Boulogne and was initially diagnosed as DAH (disordered action of the heart), still a very

⁹⁸ See chapter two, *Training*, for notes as to further service of Smith-Barry.

⁹⁹ Hooton, *War Over*, p.102; Boyle, *Trenchard*, p.184. Trenchard apparently thought Dowding a ‘dismal Jimmy’, although it is right to add that Dowding, when commander of No 16 Squadron, flew on operations, although squadron commanders were at the time banned from operations.

¹⁰⁰ M Baring, *Flying Corps Headquarters 1914-1918* (London, 1920) pp.174-176.

common diagnosis in soldiers until generally overtaken by ‘shell-shock’ After a few days he was sent to England on the Hospital Ship St. David and admitted to No 2 General Hospital in London on 22nd of November.¹⁰¹ A member of No 22 Squadron Lt G H Walker, was admitted to No 8 General Hospital Rouen in October having been diagnosed with Neurasthenia, he was transferred to England and admitted to Hospital. Walker recovered, and he went back to France to serve with No 45 Squadron. Unfortunately, on 28th July 1917 he and his observer 2Lt B G Beatty, were one of three 45 Squadron crews lost that day.¹⁰² Second Lieutenant V W Harrison of 25 squadron, was another pilot who was taken off flying during the Somme battle. On 27th September, he was escorting a reconnaissance aircraft when it was attacked by two German aircraft. Harrison was shot down but he and his observer (Sgt L S Court) were unhurt. He returned to action, but on 19th October, was diagnosed with Neurasthenia and sent back to England where he was admitted to London Hospital. He did not return to France.¹⁰³

As the battle continued and air fighting continued, with a large increase in both defensive and reconnaissance patrols. The importance of having effective fighter aircraft to defend reconnaissance aircraft was emphasised with the introduction

¹⁰¹ DAH was first used in the Boer War to classify soldiers suffering from symptoms like those of shell shock of neurasthenia. In WW1, some 35,000 soldiers were diagnosed with DAH, in addition to the 80,000 or so Shell-shocked cases: RAFM CC Bibby, J E H

¹⁰² RAFM CC Walker, G H; Henshaw *the Sky Their*, p.105 & p.339.

¹⁰³ RAFM CC Harrison, V W; Henshaw, *The Sky Their*, p.55.

by the German Air Force of new Albatross fighters in September, operating in large formations led by the inspiring and successful Captain Oswald Boelcke.¹⁰⁴

On 28th September, Trenchard informed the War Office that he was asking Sir Douglas Haig (C-in-C France) to demand that the number of fighting squadrons with each army from four to eight. The next day Haig wrote to the War Office:

I have the honour to request that the immediate attention of the Army Council may be given to the urgent necessity for a very large increase in the numbers and efficiency of the fighting aeroplanes at my disposal. Throughout the last three months the Royal Flying Corps in France has maintained such a measure of superiority over the enemy in the air that it has been enabled to render services of incalculable value. The result is that the enemy has made extraordinary efforts to increase the number, and develop the speed and power, of his fighting machines. He has unfortunately succeeded in doing so and it is necessary to realise clearly, and at once that we shall undoubtedly lose our superiority in the air if I am not provided at an early with improved means of retaining it. Within the last few days the enemy has brought into action on the Somme front a considerable number of fighting aeroplanes which are faster, handier and capable of attaining a greater height than any at my disposal with the exception of one squadron of single seat "Nieuports", one of "FE Rolls Royce", and one of "Sopwiths"...The result of the advent of the enemy's improved machines has been a marked increase in the casualties suffered by the Royal Flying Corps, and though I do not anticipate losing our present predominance in the air for the next three or four months, the situation after that threatens to be very serious unless adequate steps to deal with it are taken at once.¹⁰⁵

Sir Douglas Haig's letter was discussed by the War Committee on 17th of October and it decided to send a Naval squadron made up from Royal Naval Air Service (RNAS) units at Dunkirk. Accordingly, Naval Squadron No 8 (later numbered 208) was formed flying Nieuport and Sopwith aircraft. The squadron was sent to the front at once (Vert Garland aerodrome) and carried out its first patrol on 3rd of November.¹⁰⁶ This squadron, added to the four new squadrons transferred

¹⁰⁴ Jones, *TWITA* Volume II p.283.

¹⁰⁵ Jones, *TWITA* Volume II pp.296-297; Boyle, *Trenchard*, pp.194-195.

¹⁰⁶ Jones, *TWITA* Volume II, p.314. For an account of operational and morale difficulties with the Naval Squadrons see next chapter.

from England did help the RFC to retain the initiative, the extra squadrons considerably increased the number of aircrew required to maintain operations. Although Trenchard noted the increase in casualties, he did not mention the increasing difficulty of the training squadrons in England to produce enough properly trained pilots and observers to replace those lost in action.

The table above (p-203) setting out the RFC casualty figures for the Somme offensive (July-November), show that 222 aircrew were killed in action, 132 became prisoners of war and 151 were wounded. During the same period, there were 82 aircraft accidents with 31 aircrew killed.

During the period of the Somme campaign fourteen pilots and observers broke down and were removed from flying.

Kite Balloon Observers

It is appropriate to note the contribution of another group of aviators wearing an observer's badge who suffered heavy losses and some of whom became psychiatric casualties: Kite Balloon crews. Balloon observers needed a sound knowledge of artillery procedures and in early 1915, of the thirty-two officers serving in the Kite Balloon squadrons, ten were army officers, three were RFC

officers and the rest were naval officers (with experience of naval gunnery).¹⁰⁷

Kite Balloons, as aircraft, were part of the RFC, and with that recognition came the question of a distinguishing badge for observers. After some discussion GHQ RFC was empowered to train and award the observers badge to successful trainees.¹⁰⁸

Training was short and basic. Potential observers were sent to one of the RFC balloons schools at Lydd or Rolleston, where they carried out six free balloon flights, four with instructors. During training if they wished they could make a parachute descent. Final training was a three-hour flight in a Drachen balloon: if the trainee suffered from airsickness and asked to come down, he failed.¹⁰⁹ An indication of the value of balloon observers was the fact that on completion of training they immediately received their Observer's badge and 'flying pay' of eight shillings a day, the same as pilots and like pilots before any having any operational experience. (It will be recalled that aeroplane observers had to have operational flying experience before receiving their flying badge: and received five shillings a day flying pay). Balloon observers, who were entitled to wear the Observer's badge, took the same risks as aircraft observers including the very real possibility of being shot down in flames.¹¹⁰ Additionally, balloon crews did not return to a safe environment at the end of an operational flight as flyers

¹⁰⁷ C G Jefford, *Observers and Navigators* (London, 2014) p.75.

¹⁰⁸ Jefford, pp.77-78.

¹⁰⁹ P C Ford, 'The Practical Training of Kite Balloon Observers' *Cross & Cockade* Volume 35 (1) 2004 pp.13-21.

¹¹⁰ Barker, *The Royal Flying Corps* pp.88-90.

did but were subject to shelling and the other dangers of front-line soldiers. This point was made by a balloon observer in 1915:

Being so near the front there were no cosy safe billets as the aeroplane flyers had, instead we found ourselves camping in dugouts ¹¹¹ in the mud..... often blasted out by shellfire.¹¹²

In 1916, there were forty balloon sections on the Western Front located parallel with the front line, but slightly behind it. Each section had an establishment of four observers. At the end of the Somme campaign several lessons regarding balloons had been learnt, including the realisation that more balloon observers were needed. Following discussion at GHQ regarding the possible incorporation of Balloons sections into the Royal Artillery (which did not happen) it was decided to attach an artillery officer to each section and at the same time an RFC officer from each section was sent home to assist with the formation and training of new sections.¹¹³

The British Kite Balloon complemented the work of aircraft ‘spotting’ for Artillery batteries. The observers went up to note enemy gun positions, trench changes, movements behind the lines, indeed anything which might or could become a target, or which would be of note to Army Intelligence.

Operations with balloons, were simple but dangerous. Balloon units came with their own crew, transport and engine operated winch and were fully mobile,

¹¹² Barker, *The Royal Flying Corps* p.90.

¹¹³ Jones, *TWITA Vol II* pp.309-310.

although once established on site they generally remained in one place until the whole front line moved.

Balloon observers, usually working in pairs operated from a basket attached to a captive balloon, which would be winched to a height between 1,000 to 5,000 feet. They took with them target information and had direct telephone contact with the battery they were to work with. Balloons used the same method of shot correcting as aircraft of the corps squadrons. Their training, in addition to balloon work included instruction in aerial observation and photography and because of frequent, sometimes daily ascents, soon got to know their area in detail. The usual method of working was to use the morning, when the sun, rising in the east, would be in their eyes, to confer with artillery liaison officers and establish operational details. In the afternoon, with the sun overhead or in the West, balloons would be flown, and one round would be fired, and the observer would report its fall.

From then on targets would be attacked with the observer correcting fire as required.¹¹⁴

However, the actual business of spotting and photography was subject to three especial factors which made the observer's work particularly dangerous. Firstly, they were in the path of shells sometimes their own, but more often the enemy who were sometimes able to elevate guns sufficiently to aim directly at balloons.

¹¹⁴ P. C. Ford, 'The Practical Training of Kite Balloon Observers' *Cross & Cockade* Vol 35 (1) 2004, pp.13-21.

Secondly, Balloons on both sides, (filled with highly inflammable Hydrogen) became prime targets for fighter aircraft and there was always the possibility of being shot down in flames if the balloon could not be winched down in time.

Lastly, the wind was a natural enemy:

It acted on the balloon capriciously, spinning it round on itself like a polo pony, always choosing the most inconvenient moment. Worse still was the bending of the cable in a gusting wind which might yank the balloon down by a hundred feet or so. Then, when it eased, the balloon shot up again. All these disturbances could happen suddenly and speedily, with disastrous effects on the balloontics stomach.¹¹⁵

The wind could also be a problem if the balloon suffered a cable break, unless the crew bailed out (see below) they might be carried on the prevailing westerly wind over the German lines. An advantage which balloon crews had which aircraft crews did not, was the chance to leave the balloon by parachute if attacked. The Air Board explained the rationale of given balloon crews, but not aircraft crews, parachutes:

It is the opinion of this board that the present form of parachutes is not suitable for use in aeroplanes and should only be used by balloon observers, It is also the opinion of the board that the presence of such an apparatus might impair the fighting spirit of pilots and cause them to abandon machines which might otherwise be capable of returning to base for repair.¹¹⁶

Although the first paragraph of the Boards opinion makes sense, because current parachutes were bulky and heavy and most aircraft in France at the time had no capacity for any extra weight, the second is nonsense. German aircraft carried parachutes from 1917 and there was no dilution of fighting spirit.¹¹⁷

¹¹⁵ Barker, *The Royal Flying Corps* p.90.

¹¹⁶ Barker, p.313; Steel & Hart, pp.254-255.

¹¹⁷ It should also be noted that no aircrew, would be in any hurry to leave an aircraft that could still fly.

Although balloon observers were recruited in the same way as other RFC aircrew, a significant number were failed pilot candidates, they seem to have been a relatively unflamboyant group often somewhat older than squadron aircrew. By 1917, the requirement for balloon observers was substantial, not only were 40 men needed to meet the current expansion plan, but a further 150 were needed to replace 'wastage' at the front.¹¹⁸ It is difficult to obtain an accurate number of balloon observers employed at the front, but a reasonable estimate, collating several sources, (and including overseas units) is that some 700 in total served including, six Lt-Colonels, seven Majors and at least 27 Captains. By the 31st January 1917, there were 89 balloon sections in France, suggesting at least 360 observers at the front.¹¹⁹

The qualities required of a Balloon observer included, strength of vision, a strong stomach and clear head. A German writer describing the work of German balloon observers (who had the same role as British observers) noted:

Only extraordinary will-power, self-control, strong-nerves and a stout heart enabled him to go up again after his descent.¹²⁰

Casualties were very heavy in the kite balloon units and many observers suffered from combat stress. One stress factor applying particularly to balloon observers was the long exposure to danger during a tour. A typical aircraft crew member

¹¹⁸ C. G. Jefford, *Observers & Navigators* (London, 2014) p.78.

¹¹⁹ *Army List, February 1917*; Jefford, *Observers & Navigators*, pp.78-79; Ford, 'The Practical Training of Kite Balloon Observers', p.15.

¹²⁰ G. P. Neumann, *The German Air Force in The Great War*, (London, 1920) pp.100-101. Neumann was a Major in the German Air Force in the First World War.

would be taken out operations after about six months with about 200 hours combat flying, some balloon observers, often completing 10 or 12 hours aloft in a duty period, achieved more than 1500 hours flying duty in a similar time. All this was in addition to being exposed to the usual dangers of trench warfare during non-flying periods.

One balloon observer Captain G D Machin, awarded a Distinguished Flying Cross (DFC) after long service at the front, stammered badly and suffered from shell-shock.¹²¹

In fact, some thirty or so balloon observers suffered from psychiatric illness and diagnosis included Shell Shock, neurasthenia, DAH and of course Flying Sickness. One of the earliest to suffer because of his service at the front was 2/Lt P B Moxon. He was admitted to No 24 General Hospital Etaples on 28th June 1916 suffering from Shell Shock and immediately transferred to London where he was admitted to No 4 London Hospital. He did not return to the front.¹²² Another who became a long-term casualty of the air war Lt R S Jameson of No 23 KB section, he was diagnosed with Flying Sickness on 15th September 1918 and was transferred to the RAF psychiatric hospital in London, he was still a patient at Eaton Square in late 1919.¹²³ One who was luckier was 2/Lt H W Ingram who having been slightly wounded in Salonica, (one of ten balloon

¹²¹ Ford, 'The Practical Training of Kite Balloon Observers', p.20.

¹²² *RAFM Casualty Card* P B Moxon

¹²³ *RAFM Casualty Card* R S Jameson

observers in that theatre) in May 1917, was admitted to hospital with Neurasthenia in June but was discharged to duty in early June.¹²⁴

As noted above the hazards of balloon service was recognised in the RFC by providing balloon observers with parachutes.

These parachutes were far from perfect, but they did save many lives. One Observer, 2/Lt S Jolley, made five jumps during 97 hours in the air. Between June 1916 and June 1917, 106 jumps were made by 2nd (Balloon) Wing.¹²⁵

In the first two years of operations in France aircraft developed from a sometimes-useful reconnaissance tool into an essential part of an army's operational equipment. As well as reconnaissance (including photographic) and artillery spotting, aircraft were used to attack the enemy, both by interfering with German air operations and by direct attacks on ground forces including targets bombed far beyond the trench line.

There was a heavy cost in casualties, during 1916 some 842 RFC aircrew became casualties, including those killed in flying accidents. The 'Fokker scourge' in late 1915 and the first months of 1916 followed by the intensive air activity during the Somme offensive and the consequent heavy casualties not only adversely affected morale but resulted in the first significant numbers of aircrew suffering from 'Flying Sickness'. In the first six months of 1916 there were seven cases and by the end of the year a further fourteen aircrew had been withdrawn from

¹²⁴ *RAFM Casualty Card* H W Ingram.

¹²⁵ C. G. Jefford, *Observers & Navigators* (London, 2014) pp.76-77.

flying for this cause. As already noted, there were few cases in 1915, but by November 1916 the total was twenty-five, the precursors to the hundreds who would suffer in the last two years of the war.

Chapter Six

War in the Air 1917-1918

During the winter of 1916-1917, a period of bad weather caused a significant reduction of operations. This pause was used by both the GAF and the RFC to strengthen their positions. The German Air Force used the lull in operations to reorganise their aircraft into large groups (staffels) which could be directed to points of pressure.¹ For the RFC, the Somme campaign had clearly shown the value of air power: especially the vital role of the air fighter to establish air superiority so that the other vital roles of the RFC over the front could be carried out. In January 1917, the RFC had 39 squadrons in France. By March they had been reinforced by a further 12 RFC and four Naval squadrons.²

Despite these additions: in the first months of 1917 the German staffel operations established an ascendancy over the RFC. In the six weeks of the Arras Battle alone the RFC lost some twenty per cent of its aircrew strength.³ However, by June (helped by the introduction of improved aircraft) the RFC had regained air supremacy, although the fighting continued at very high intensity: with heavy losses on both sides, for the remainder of the War in France. Casualties of the RFC/RAF during these last two years of the war were markedly increased from

¹ G. P. Neuman (translated J E Gurdon) *Over the Front: The German Air Force in the Great War* (London, 1920) p.226.

² *AP 125 The Royal Air Force In The Great War* (Air Historical Branch, 1936), pp. 188-191; S. F. Wise, *The Official History of the Royal Canadian Air Force, Volume 1 Canadian Airmen in the First World War* (Toronto, 1980) pp.393-395; T Henshaw, *The Sky Their Battlefield* (Fetubi Books, 2014) p.65.

³ W Raleigh and HA Jones, *The War in the Air* (London, HMSO, 1922-1937), *Six Volumes* (hereafter *TWITA*) - *Volume III* pp.335-336; D. E. Winter, *The First Of The Few* (London, 1982) pp.155-156.

those suffered up to the end of 1916. There was also a great increase in the number of aircrew removed from flying with Flying Sickness.

The table below shows losses from January 1917 to 11 November 1918.

Casualties/Flying Sickness 1917-1918⁴

	KIA	WIA	POW	KIFA	WIFA	Fly/S
1917	1092	343	495	245	99	46
1918	1338	471	754	354	129	602 ⁵

These figures do not include the casualties suffered by the Independent Force which are examined in the next chapter. Despite the arrival of the extra squadrons, Trenchard demanded, with Haig's support, more squadrons for the RFC, he wanted a total of 106 operational and 95 reserve squadrons.⁶ These demands (although never fully implemented) involved significant increases in manpower requirements as new squadrons needed not only new aircraft, but many more skilled mechanics and fitters, effective means of supply to the aircraft parks (including ferry pilots) and of course trained pilots and observers. These demands came at a time when all services were fully stretched and the demand for manpower, especially skilled manpower was at its greatest.

⁴ These figures include RNAS aircrew, 55 KIA & 25 POW KIA, includes died of wounds, and died as POW immediately after capture. WIA, not noted if slight. POW, if wounded and captured, noted under this heading KIFA, killed in flying accident on operational squadron in France.

⁵ Casualty figures from Jones, *TWITA* Vol VI Appendix XXXVII; Henshaw, *The Sky Their*, pp.65-271, p347, pp.56-394; E. R. Hooton, *War Over The Trenches* (London, 2010) p.168.

⁶ Boyle, *Trenchard* pp.208-209; H, St George Saunders, *Per Ardua The Rise Of British Air Power 1911-1939* (London, 1944) p.109. At the same time, 21 June 1917, the number of aircraft established on Scout (fighter) squadrons was increased from 18 to 24, which increased the demand for pilots. *AP 125, The Royal Air Force*, pp.130-131.

The GAF's ascendancy over the RFC was achieved, partly by the introduction of new and better aircraft, but also by new tactics, using 'Jagdstaffeln' (Jastas, formations, led by experienced pilots) to attack '*en masse*.' Trenchard had already informed Haig that RFC aircraft would be inferior to the Germans, at least until the new fighters (Bristol Fighter, SE5, and Camel) arrived. Meanwhile, he would maintain his offensive policy.⁷

Although he was aware of the RFC's weakness Haig did not question Trenchard's policy. Nor did anyone else, although some Second World War Royal Air Force senior officers retrospectively claimed that it had been questioned at the time.⁸ and one RFC brigade commander later wrote:

But the main reason why this offensive policy was a stubborn stupidity is inherent in the difference which exists between a planned attack on a well-defined objective and a 'nosing about' on the lookout for trouble. Once assured that we were to be found throughout all the hours of daylight trespassing over their side of the line, dangling like bait in the sky, the Germans were not slow to devise means for turning the situation to their advantage.⁹

Charlton also pointed out the disadvantage RFC crews suffered from the persistently westerly wind, which he felt was ignored by RFC planners. Criticized or not, one obvious result of Trenchard's policy of continual offense and RFC expansion was a constant shortage of aircrew and aircraft as the training squadrons and aircraft manufacturers struggled to keep up with demand.

⁷ Jones, *TWITA Vol III* p.339; Boyle, *Trenchard* p.162.

⁸ See below Ref 36.

⁹ L. Charlton., *War From The Air*, (London,1935), pp.56-57.

The Battle of Arras, which commenced on the 4th of April, was the beginning of what turned out to be the worst month of the war for the RFC. This was despite the RFC having a considerable numerical advantage. To oppose the German Sixth Army which had 195 aircraft, the total strength of the RFC along the front of the First and Third Armies was twenty-five squadrons comprising 365 aircraft a third of which were single seat fighters.¹⁰

Already during March in the lead up to the battle, the RFC had lost 143 aircrew (killed and missing) and the intensive fighting confirmed that control of the air was equally important to the German Air Force. In fact, despite suffering heavy casualties the British and French air operations during the German withdrawal to the Hindenburg line (Operation Alberich) had been ineffective in both disrupting the German move or in providing any useful intelligence: it was not until 25th February that irrefutable evidence that the withdrawal had taken place was provided by scout aircraft of No 56 Squadron.¹¹

Despite being outnumbered at the beginning of the April offensives, the Jastas, using the latest fighters (Albatros D-111s) had gained and maintained control of the air. The most successful unit was Jasta 11 led by Manfred von Richthofen, destined to become the wars highest scoring fighter pilot. Many of his victories were achieved during early 1917, including the RFC's worst time 'Bloody April

¹⁰ Jones, *TWITA* Vol III p.334. Taking the front of the four British Armies in April 1917, the superiority in numbers was even more marked 754 as against 264 German; E R Hooton, *War Over The Trenches* (London, 2010) pp.129-134.

¹¹ Barker, *The Royal Flying Corps in World War 1* (London, 2002), p.234.

1917'.¹² A clear indication of German superiority during this period was the number of RFC aircraft shot down which crashed into or behind British lines; illustrating a failure of the offensive policy which was designed to keep enemy aircraft away from British lines.¹³

The new Bristol Fighter of which much was expected, finally came into action in April. However, even this aircraft experienced a disastrous introduction to the war on the 5th when a patrol of six No 48 Squadron aircraft met Jasta 11 led by Richthofen and was destroyed, losing five aircraft.¹⁴ A few days later on the 7th another crew was lost and on the 11th three more, making ten for the week.¹⁵ These losses of the Bristol Fighter did at least result in a beneficial change in of tactics by its crews. At first the pilots had tried to maneuverer the aircraft so that the observer could bring his gun to bear, but it was realised that the high performance of the aircraft could be more effectively used by the pilot taking advantage of its flying qualities by bringing its front gun into use. It was this change of tactics which enabled this aircraft to become one of the best fighting aircraft on the Western Front.¹⁶

Another factor contributing to both the heavy losses (and fall in morale, noted below) suffered by the RFC in April was the introduction of the RE8, an aircraft

¹² P. Kilduff, *The Red Baron*, (London, 1994) pp.87-107.

¹³ Jones, *TWITA* Vol III p.235.

¹⁴ Henshaw, *The Sky Their*, p.76. The patrol leader was Captain Leefe-Robinson VC, who shot down the SL Zeppelin. He became a PoW and survived the war to die of influenza in 1919.

¹⁵ Henshaw, *The Sky Their*, p.79.

¹⁶ *Air1/1/1223/204/5/2634* 48 Squadron Combat reports June 1918; Wise, *Canadian Airmen and the First*, pp. 414-415.

with a bad reputation. The RE8 was a replacement for the obsolete BE2c which was still in use with 17 squadrons in 1917. Unfortunately, the RE8 had been shown to have many serious shortcomings. Major J A Chamier on the staff of Third (Corps) Wing, who after some test flights, prepared notes for pilots pointed out:

The chief thing to remember is that the machine gives very little indication of losing its speed until it shows an uncontrollable tendency to dive which cannot be corrected in time if you are near the ground..... You will find that the rudder control in every case of spinning or swinging tail will become very stiff, and you may not get it very central but you should (without putting on sufficient pressure to break anything) try to do this.

With the engine off the only thing is to avoid gliding too slowlyat 65mph or below, when gliding, the machine suddenly loses speed. This is particularly the case when making a turn to enter the aerodrome as the extra resistance caused by the rudder is sufficient to bring down the pace..... One more point as regards losing speed. Observers must be cautioned that when an aeroplane is gliding down from work the lines they must not stand up in order to look over the pilot's shoulder for the fun of the thing, as the extra head resistance caused may lead to aeroplane falling below its critical gliding speed, and so bring about an accident.¹⁷

As if that were not enough the fuel tanks were situated directly behind the engine and in the event of a crash, fuel from the tanks invariably burst into flames after contact with the hot engine. Finally, the aircraft was thought to be too stable and thus became an easy target for German fighters.¹⁸ This last characteristic was at least partly responsible for the severe losses by No 59 Squadron on 13th April. On that day, the RE8s had been engaged in a patrol in the Arras area. It had been thought that the patrol would be adequately protected by offensive patrols by the 9th Wing and the 13th Wing timed to cover the area. In the event

¹⁷ P. R. Hare, *The Royal Aircraft Factory* (London, 1990), p.262.

¹⁸ Wise, *Canadian Airmen*, p. 400.

the 9th Wing patrol was flown late and the 13th Wing did not see the RE8s. Number 59 Squadron lost six RE8s in ten minutes to Jasta 11 led by Richthofen, with ten pilots and observers killed.¹⁹ Additionally, also in April, two scout (fighter) squadrons, No 29 and No 60 both flying Nieuwpoort's from Izel le Hemeau, lost 105% of their pilots in April with 27 pilots killed or missing and four wounded during the month.²⁰ The continued success of Richthofen's jasta was another factor adversely affecting RFC morale, but as success always does, boosting German morale.

Although concerned by the high wastage of pilots and observers: 316 aircrew were lost, (killed or missing) in April and nine more killed in accidents, Trenchard did not change his 'offensive' policy.²¹ The practical effect of this very high wastage rate was that the life expectancy of aircrew on the Western Front was short and getting shorter. In June 1917 it was calculated that reconnaissance bomber pilots and observers would survive for three and a half months and a scout (fighter) pilot just two and a half.²² With the increase in the number of 'contact patrols' (low level) with their high casualty rates these survival rates were to become even shorter. The War Office was using the wastage rates below to calculate the requirements for training aircrew in 1917 (months of operational life)

¹⁹ Jones, *TWITA* Vol III pp.350-351; Wise, *Canadian Airmen*, p.400; Henshaw, *The Sky Their*, p. 80.

²⁰ A J Scott, *History 60 Squadron* (e-Book, 1920,2014) Appendix II Battle Casualties.; J H Morrow, *The Great War in the Air*, p.234; Wise, *Canadian Airmen*, pp.407-408.

²¹ Jones, *TWITA* Vol III Appendix XXXVII p.160. As always there are differences in casualty figures from different sources. Henshaw, *The Sky*, p.347 gives 319 killed or missing, with a further 103 wounded

²² Morrow, *The Great War In the Air*, p.236; Barker, *The Royal Flying Corps*, p.237.

Type of Squadron	Pilots	Observers ²³
Corps	4	4
Night Flying	4	4
Fighter Reconnaissance	3.5	3.5
Bombing	3.5	3.5
Single seat Fighter	2.5	

Combat reports clearly show that in 1917 and again in mid-1918 the actual wastage rate from combat and accidents showed these estimates to be optimistic.

In fact, the demand for replacement aircrew was so great that training time had to be curtailed and the flying experience minima disregarded, resulting in inadequately trained replacements arriving on squadrons; some pilots arrived with only 20/25 hours experience, many of whom soon became casualties.²⁴

One pilot in his post war memoir suggested that during 1917, the life expectancy of a pilot was only three to four weeks.²⁵ It was during this period that Lt Mick Mannock (later VC. DSO.** MC.*) first mentioned feeling the strain of air fighting. He had arrived in France in March and posted to No. 40 Squadron on 5th April. He had been involved in one accident (on 8th) and four operational flights by 20th and was already suffering from stress:

Over the lines today in Parry's bus. Engine cut three times. Wind up. Now I understand what a tremendous strain active service flying is. However cool a man may be there must always be more or less tension on the nerves under such trying conditions. When it is considered that seven out of ten forced landings are practically 'write offs', and 50 per cent are cases where the pilot is injured, one can quite understand the strain of the whole business.²⁶

²³ TNA Air 1/683/21/13/2234 RFC Training. Winter, *The First of The Few*, p.152; J. Hamilton-Paterson, *Marked For Death The First War In The Air*, (London, 2015) pp.137-138.

²⁴ Barker, *The Royal Flying Corps*, p.235-6. By comparison in the Second World War pilots were given between 80 and 100 hours before being sent to an Advanced training unit and then to squadrons.

²⁵ A. Gould Lee, *Open Cockpit* (London, 1969), p.67-69.

²⁶ M Mannock, *The Personal Diary of 'Mick' Mannock* (annotated F Oughton) (London,1966), pp.49-49.

It is not surprising that RFC morale suffered during this period, as casualties and lack of faith in fighting equipment (aircraft) are major factors affecting morale. In fact, in April 1917, RFC morale was probably lower than at any time in the war and remained critical for the rest of the year. Indeed, casualties increased again in August when 'ground support' missions (contact patrols) were added to Trenchard's offensive patrols.²⁷ . As already noted, Trenchard was continually asking for more resources and in response to a plea for more fighters, in April 1917 four Royal Naval Air service (RNAS) squadrons arrived in France. Unfortunately, the performance of these squadrons was below expectations and led to a serious problem with discipline and morale. On 12th July, the RFC opened a major air offensive preceding the ground attack by the British Fifth and Second Armies in Flanders. Before the ground attack commenced Trenchard had complimented his brigade commanders, noting that he expected that '*all units keep up the greatest amount of energy in this wearing down process.*'²⁸ This memo was passed to the Commanding Officer of the Naval Wing, Captain C L Lamb and he relayed this message to his Squadron commanders but added words to the effect that once the battle had started the aerial offensive could be eased up (perhaps to encourage the crews). Captain Lamb had already had some concern

²⁷ Jones, *TWITA* Volume IV pp.161-165 & Appendices - Appendix XXXVII p.161; Morrow, *The Great War*, pp.236-237; Henshaw, *The Sky Their*, p.347 & pp.106-104. In that month casualties were: KIA 141, WIA 92, PoW 49.

²⁸ Wise, *Canadian Airmen in the Great War*, p.174; *AP 125 The Royal Air Force*, pp.274-275.

about morale and fighting spirit and in a previous report to *his* Air Commander, Vice-Admiral Bacon, he had mentioned aircrew shortages ‘*owing to many casualties and that many pilots- who had been serving for a considerable period- had been breaking down.*’ Bacon had replied, telling him to make the protection of the Army his prime concern, and Lamb responded with a memo with outlined his problem:

Of late there have been rather a large proportion of pilots who state they are unable to fly over the enemy lines for various causes. In view of the great shortage of pilots for the forthcoming operations it is essential, as far as possible, that every endeavour is made to eliminate these cases, and I think that the squadron commanders can assist very largely if they make every effort to do so. Many of these cases are genuine, and these I will recommend for seaplanes, but I am convinced that a large proportion of the officers prefer the comfortable surroundings of an aerodrome situated near London to the glamour and glory of the battlefield. Wing Commanders and Squadron Commanders must make every endeavour to combat this idea.²⁹

This was not the only difficulty with morale. On September 30th, Naval squadron No 10 (supported by No. 23 and 70 squadrons) had been ordered to bomb and strafe Rumbek airfield at low level.³⁰ Naval 10 carried out this operation from 3000 feet and were ordered to repeat the raid. The squadron commander reported that the squadron were ‘not up for it’.³¹ The RFC Wing Commander (Lt-Col F V Holt) pointed out to the Squadron Commander, R F Redpath, the seriousness of his statement. Later Redpath rang Holt and said he had a counter suggestion. Holt visited the squadron to hear Redpath’s

²⁹ Wise, *Canadian Airmen in the Great War*, pp.174-175.

³⁰ No. 70 squadron lost one aircraft this day, pilot killed, and one aircraft damaged. Henshaw, *The Sky Their* p.122.

³¹ In September 10 (N) had flown 14 operations, mostly at 9,000-12,000 feet, but two at 2000 feet possibly two EA claimed, and two pilots KIA and three made PoW. Henshaw, *The Sky Their*, pp .14-122.

suggestion, which was that the bombing attack should be carried out with DH4s instead of Sopwith Camels (the aircraft used by Redpath's squadron). To which

Holt replied:

I explained that if an Infantry Battalion, when told to attack, suggested that the operation would be better performed by cavalry, it would be a similar suggestion to his. I asked him if he was quite sure that he was fairly representing his pilots and asked why they had behaved in such an extraordinary way. He replied that they did not consider that the probable results were worth the risk to machines and pilots. I pointed out that one could not run a war on those lines and that the orders were very carefully considered before being issued.³²

Holt did not order the operation to be carried out, fearing a refusal, '*which would have led to a very serious situation*' but passed the matter via V Brigade to GHQ.

Strangely, although Trenchard was known as a firm disciplinarian, he took no direct action against Redpath or any other squadron pilot. It is suggested that

there were probably two cogent reason for his seemingly uncharacteristic response. Firstly, formal action a Board of Inquiry, possibly followed by a

Court Martial and consequent publicity would bring attention to the state of morale in RFC (and RNAS) at a time when the air war was continually

intensifying. Secondly, Redpath was Canadian and was at the time only acting

Commanding Officer. He was one of the large numbers of Canadian aircrew

being produced by the Canadian Training schools and joining the RFC/RNAS,

(200 pilots each month).³³ Trenchard may well have felt that this was not the

time to do anything to discourage them. The action, which was taken, was to

³² TNA Air1/770/204 /4/258 Annex to V Brigade summary October 1917; Wise, *Canadian Airmen* pp.432-433.

³³ Jones, *TWITA* Vol V p.467.

immediately transfer the squadron to IV Brigade and soon after, out of the RFC to 4 Wing RNAS Dunkirk.³⁴

RFC casualties remained high throughout the summer; in the 50 days between 31st July to 19th September 434 aircrew were lost. There were also indications that Trenchard's policy of nothing but offense, especially the emphasis on 'forward', that is, over the German side of the lines, did not find favour with all aircrew. A pilot with No 46 Squadron, Arthur Lee Gould expressed his concerns about role of Distant Offensive Patrols (DOPs) behind German lines:

The futility of such wasteful losses was the deeper because if a DOP were weak in numbers, as we were now, it could easily be overwhelmed, but if the patrol were strong, the Germans could, and frequently did, ignore it leaving us with a debit of force-landed aeroplanes, wasted engines and wasted petrol.

Had there been a specific objective in our deep penetration, such as covering a bomber raid or a photographic reconnaissance, we would have thought nothing of it, but we could see no rational purpose in our coat-trailing DOPs. We could not see what was achieved by this so called carrying the offensive into enemy territory. Was it to impress the French or to discourage German troops? But they could hardly see us at 15,000 feet up. Was it to lower the morale of the German Air Forces? This notion we found laughable for it was our morale that suffered.³⁵

He went on to point out that the result of exposing aircrew to unnecessary risks on tasks which experience showed were pointless, was to build up a deep resentment. There is no doubt that heavy casualties, concerns about some of the aircraft they flew and doubts about Distant Offensive Patrols, engendered on some squadrons a lack of confidence in Trenchard's general policy of relentless offence. Although Trenchard did make visits to squadrons in the field it is not

³⁴ Jones, *TWITA* Volume IV p.93; *AP 125 The Royal Air Force*, p.188 fn; Morrow, *The Great War*, p.237. Naval 10 returned to the front in March 1918,

³⁵ Gould Lee, *Open Cockpit* (London, 1969) pp.113-114. Gould Lee survived the war to become an Air Vice Marshal in the RAF.

clear that he realised that there was a morale problem in the RFC. Maurice Barings (Trenchard's secretary, who accompanied him on these visits) noted some conversations which should have indicated that all was not well with aircrew morale. On 24th April 1917 they visited Canadas, Baring notes:

At Canadas I saw a pilot who told me he was "fed up with Flying" he had done 500 hrs, he had had enough. He was sick to death of it. He didn't care. Then he paused and said "but the General's a dam fine man to serve under".³⁶

Baring gives no indication that he was concerned about the pilot's attitude, or that he told Trenchard about his conversations. On other visits he notes many complaints, usually about shortcomings of aircraft, which he did report, but never seems to appreciate the effect these problems with aircraft could or did have on aircrew, although he did note the 'gloom' which the loss of Albert Ball cast over the RFC,³⁷

Although, as already noted, the heavy casualty rate was the major reason for low morale, there were other contributing factors. In some cases, there was dissatisfaction with aircraft and as we have seen, some squadron commanders were inadequate leaders. Another problem which unfortunately affected most those squadrons with the most casualties was that of inexperienced replacements. No 84 Squadron Commander, Sholto Douglas, who became C-in-C Fighter Command in the Second World War, explains:

³⁶ Baring, *Flying Corps Headquarters*, p.218.

³⁷ Baring, pp. 222- 223, 231 etc. Trenchard seems to have taken a different approach when he commanded the Independent Force. When a squadron in that force suffered severe losses, he made a point of making a morale boosting visit. (see chapter seven)

The Battle of Arras in 1917 and the heavy casualties it cost the Royal Flying Corps provided me with the most anxious period that I was to know during the whole of my life in the Air Force.....The severity of our losses early 1917 was not entirely due to the superiority of the German fighters. The continued demand for an increase in the numerical strength of the Royal Flying Corps was still leading to new pilots being sent to the front with far from enough training, or even with sufficient hours of bare experience in the air, and it was in addition to the need for replacements for the squadrons already in the thick of the fighting. Because of what I found then as one of the squadron commanders who had to accept these raw replacements, I came to feel very strongly about what I considered was a very short-sighted policy, and I have been given no reason to change that view.

I am quite sure that Boom Trenchard was admitting as early as the beginning of 1916 that the pilots coming out to the front were insufficiently trained, and also that his complaint did lead to an improvement in the system of training at home. But his insistence that there should be at the same time a rapid formation of more and more squadrons for service at the front went a long way towards undermining that system; and that magnificent eagerness of Trenchard's to use the air for offence against the enemy led him quite unintentionally to make greater demands on the new pilots than were justified. In the spring of 1917 the squadrons of the RFC outnumbered the Germans by two to one; but numbers alone do not spell superiority.....we would have been better off if we had greater experience and quite a few of us who served on the Western Front ... felt the same way about Trenchard's policy of driving hard almost regardless of cost.³⁸

Major Sholto Douglas, following a tour commanding No 43 Squadron in 1916, was appointed Commanding Officer of No 84 squadron in September 1917, equipped with SE 5A fighters. Apart from Douglas himself, only his flight commanders had any experience of air fighting and in the squadron's first sixteen days in action lost nine pilots, either killed or POW. He said:

It was a hard school for a new and untried squadron and at first, owing to the inexperience of the pilots, we suffered casualties. But bitter experience is a quick teacher... A lesson we soon learnt was that there are occasions when it is wrong to accept battle, that one must always strive to take the enemy at a disadvantage. Equally, one must not be taken at a disadvantage oneself and this often entails a deliberate refusal of battle and a retirement so that the enemy's advantage may be nullified. If for instance that advantage is height, then one should retreat, climb hard and go back and seek out the enemy at his own height or higher. Of course, there are occasions when battle has to be accepted at a disadvantage--- if for instance, one sees another British squadron being overwhelmed by superior numbers,

³⁸ W. S. Douglas, *Years of Combat. Vol I A Personal Story of the First War in the Air* (London, 1963), pp.179-180.

then obviously whatever the odds one must accept battle. But normally one should force the battle upon the enemy.³⁹

Douglas applied this policy to 84 squadron's operations and took another lesson from the early losses: that tactics needed to change. Accordingly, he spent considerable time in ensuring that his pilots were competent at formation flying, and when they were, the squadron acted always in formations of at least three and if possible as many as nine. He also ensured that all pilots were given time to be competent and confident flying the SE5A which had a reputation as a difficult aircraft to fly.⁴⁰ The result was an efficient squadron with a casualty rate below average. During the four months from December 1917, the squadron claimed 68 enemy aircraft destroyed (almost certainly an overclaim) with only two squadron pilots lost during this period. It was during January/February 2Lt A W Beauchamp Proctor an 84 Squadron pilot later to win the VC, shot down the first 4 or 5 of his eventual 54 successes.⁴¹

It is right to add that Douglas's strict discipline was not to the liking of all his pilots, several, including one of his flight commanders a Canadian, who caused some disciplinary problems. Some (Canadian) pilots on 84 Squadron were unhappy with what they saw as the inflexibility of Douglas's rules about formation flying and particularly the order that attacks could only be instigated

³⁹ A. Price, *Dogfight* (London, 1993, 2009) pp.8-9 quoting a post war report by Douglas.

⁴⁰ Hare, *The Royal Aircraft Factor*, pp.288-294. The SE5a was a modified SE5 which had been subject to many complaints about its poor control at low speeds.

⁴¹ Henshaw, *The Sky Their*, pp.140-169.

by the formation leader. Captain Carl Falkenberg DFC was reprimanded by Douglas about his attitude.⁴²

By the end of January, Douglas's system was beginning to be more widely adopted. As the official history notes, the orders were for all fighter aircraft to operate by flights (normally six aircraft)⁴³ After this time most fighting squadrons flew as three formations of five aircraft led by the squadron commander. Henceforth the Commanding Officer of an RFC/RAF squadron was expected to lead his squadron in the air, thus moving away from the previous mainly administrative role influencing morale from the squadron office.⁴⁴

Given the intensity of the fighting, heavy casualties and the number of inadequately trained replacements arriving on the squadrons, it is not surprising that there was a marked increase in the number of aircrew being removed from flying because of psychiatric illnesses. Many pilots and observers noted in their post war memoirs the steady increase in signs of 'nerves' in both themselves and others.⁴⁵ Symptoms of stress noted included sleeplessness, exhaustion, nightmares, shaking, irritability, and increased drinking. Another aspect of the strain of flying was the effect of high-level flight on aircrew. The new aircraft could reach 17/18000 feet and Oxygen was not yet generally available. Lack of oxygen and cold not only affected crews in the air, but the resulting headaches

⁴² S K Taylor, 'Mums the Word' *Cross & Cockade* Volume 37 (2) 2006 pp.116-119. Interview with Falkenberg

⁴³ Jones, *TWITA*, Vol IV p.288.

⁴⁴ Jones, *TWITA* Vol IV p.387.

⁴⁵ I Jones, *Tiger Squadron* (London, 1954) pp.46-47.

and effects of cold lasted many hours after the flight. Replacement aircrew found things especially difficult. Apart from been inadequately trained: most had completed training at low level, usually below 4,000 feet because this was felt to be the maximum height for reconnaissance, but also because training aircraft lacked the performance of the latest front-line aircraft. One such pilot, Harold Balfour, (later a prominent politician) wrote:

The heat of the long summer days was terrific, and our flying hours were many. All these facts assisted to play upon the temperaments of those who were flying in France for the first time and had not got confidence either in their ability or in their aeroplanes. I can remember my bedroom companions in the farmhouse in which we were billeted, felt as I did, and how each of us lay awake in the darkness, not telling the other that sleep would not come, listening to the roar of the guns and thinking of the dawn patrol next morning. At last we could bear it no longer and calling out to each other admitted a mutual feeling of terror and foreboding. We lit the candles to hide the dark, and after that felt a little better, and somehow got through that night as we had to get through the next day.⁴⁶

He was able continue flying until following a minor injury to his hand, his Commanding Officer (Smith-Barry) took the opportunity to send him back to England. Balfour accepted the sense of this action:

This sent me to hospital and kept me off flying for some days. Smith-Barry took advantage of the opportunity and arranged that I should be sent back to England.....There was no question of being sent home in official disgrace, but purely that at that time I was of no real use to the unit and therefore better out of the way.⁴⁷

Casualty rates remained high throughout 1917, culminating with the Battle of Cambrai which started on the 20th of November. This battle was the first time that tanks had been used ‘*en masse* and to preserve the secrecy of the preparations

⁴⁶ H. H. Balfour, *An Airman Marches* (London,1933) pp.46-47.

⁴⁷ Balfour, p.59; Balfour later returned to France and ended the war having shot down nine enemy aircraft and won the MC. He was interviewed in the HTV(West) Documentary ‘The Cavalry of the Clouds (1987), accessed 10 Oct 2017, during which he referred to the responses to combat noted above.

most tank and troop movements were made at night and there was extensive use of camouflage.⁴⁸ Additionally, to prevent daylight reconnaissance, the RFC maintained a series of daylight fighter patrols over the British lines. There were no losses on these patrols.

That situation changed dramatically on the first day of the battle, fought in mist and low clouds. The air battle took place along the front line covering a five-mile advance by the tanks and infantry. There were significant RFC losses, especially to those squadrons engaged in low level operations. No 3

Squadron had a terrible day. Nine aircraft (Sopwith Camels) were tasked to attack (bomb and strafe) three German airfields, Estourmel, Carnirres and Cuadry. The first Camels arriving over Estourmel at 0730 found twelve German fighters of Jasta 5 with pilots waiting ready in their cockpits; some of these got airborne and shot down one Camel, two more Camels crashed into trees in the mist. A fourth aircraft was lost later attacking this airfield. All the pilots involved in these attacks were killed. Another squadron pilot was killed in a separate raid and a squadron aircraft crashed on take-off.⁴⁹ It seems that the Germans had been warned to expect an attack about 0700 hrs, which was why they were on standby in their aircraft. Ironically, the German's thought that the weather was too bad for flying, until they were attacked.⁵⁰

⁴⁸ G. Sheffield, *Forgotten Victory* (London, 2001) p.218.

⁴⁹ Henshaw, *The Sky their*, p.133.

⁵⁰ Jones, *TWITA Volume IV* pp. 233-234; Neumann, *The German Air Force*, p.244.

For the rest of the month fighting continued with the armies advance gradually slowing down and with RFC casualties remaining heavy. Many of these losses were to aircraft engaged in ground attack sorties, one of which was described by Captain A S Gould Lee of No 46 Squadron:

Low clouds and misty weather made flying difficult, but on the whole not unfavourable to the work. In the battle area the smoke rose to the mist and formed a barrier not pleasant to penetrate at so low an altitude. A few casualties occurred through pilots flying into the ground, but the majority were through ground fire. Those of us who survived did so I consider, because we flew very close to the ground until our objective was reached... One retains vivid pictures of ludicrous expressions on the upturned faces of German troops as we passed a few feet above their heads. As soon as the objective was reached it became necessary to rise in order to attack, and then of course one's risk from ground fire became normal.⁵¹

This was the type of ground attack which had an average loss rate of 30% of the aircraft involved. Confirmation of that loss rate is found in the operations of 23rd of November. On that day aircraft of Nos 64 and 2 (Australian) Squadrons attacked troops and transport throughout the morning.⁵² Prisoner's statements and visual evidence showed that these attacks increased the panic caused by the tanks. However, nine of the aircraft failed to return, another four were wrecked and thirteen were so irreparably damaged they had to be sent from the front for reconstruction.⁵³ The casualty rate for this operation was 35%.⁵⁴

Although in most cases these casualties can be numbered in single figures for each squadron and are infinitesimal compared to casualties in the battles on the

⁵¹ Jones, *TWITA Volume IV* pp 236-237; A. Gould Lee, *Open Cockpit*, Chap 14 p .61.

⁵² No 3 (Australian) Squadron was one of four Australian squadrons operating with the RFC. Although Australian manned and administered, they flew under RFC operational command.

⁵³ Jones, *TWITA Vol IV* pp.244-245; Henshaw, *The Sky Their*, pp.133-134. 64 Squadron lost six aircraft and 68 Squadron three on that day.

⁵⁴ Jones, *TWITA Vol IV* p.239; F M Cutlack, *Official History of Australia in the Great War 1914-1918 Volume VIII The Australian Flying Corps* (AWM,1923, 1984; pp.188-189.

ground: it should be noted that the loss of nine pilots is 45% of the squadron's establishment (20 pilots). In March 1918 at its peak the RFC had ninety-three squadrons in France with about 2100 aircrew (pilots and observers, mostly officers but with some NCOs). Between 1st March and 31st of July 1918 the average casualty rate (killed and missing) was 220 per month.⁵⁵

This wastage rate from late in 1917 and well into the summer of 1918 was at a time when, despite the influx of Canadians, there was great difficulty in finding trained replacements, especially for low level operations where of course the losses were greatest. Between July and October 1918, an average Camel squadron required twelve pilots a month to maintain establishment strength. the training squadrons (Camels) produced 14 pilots per month, but as there was also a requirement for two instructors and some staff pilot posts, there was inevitably a shortfall in squadron replacements and of course those who did arrive were without experience.⁵⁶ It is clear that the continuous turnover of aircrew on all squadrons, because of casualties in action, accidents and 'returns' to Home Establishment (for medical or further training reasons) was an important factor in the lowering of morale.

In the year ending December 1917, some 90 cases of psychiatric illnesses had been diagnosed, including 46 cases of Flying Sickness, 15 cases of Neurasthenia, 12 suffering from Debility(flying) and 17 cases of DAH.

⁵⁵ Jones, *TWITA*, Appendices, Appendix XXXVII.

⁵⁶ M. Molkenstin, *Centenary History of Australia And The Great War Volume 1, Australians And The War in the Air* (Oxford, 2014), p. 59.

Not all removals were permanent: in the case of 2/Lt E J Smart (No 9 Squadron), he was admitted to No 7 General Hospital at St Omar in May 1917 with Neuralgia, in June he was categorised as NYD (N) (nervous). Finally, on 11th July he was diagnosed as Shell Shock and transferred to London Hospital. He returned to duty and in the first Royal Air Force List on 1st April 1918, he was gazetted Lieutenant and later in November 1918, appears again on his casualty card with a minor foot injury.⁵⁷ Another member of No 9 Squadron was also a psychiatric casualty in 1917, Lt R E Thomas was admitted to No 7 General Hospital St Omar on 20th June 1917, classified NYDN, on 28th diagnosed as suffering from Neurasthenia and on 3rd July transferred to No 4 London Hospital.⁵⁸ He did not return to duty.

It was an Observer from No 9 squadron who had an unusual, but not unknown response to flying stress: that of suicide. The RFC/RAF casualty cards show a number of cases of suicide, but it is not always clear whether the officer concerned is aircrew or not, this writer's estimate of the number during the air war is 12. On the face of it suicide seems an irrational response to flying stress, but it is not unheard of for aircrew suffering from depression sometimes a result of flying or combat stress, to take their own life.⁵⁹ Although the Casualty Card raised for Lieutenant R B Cameron shows him to have been killed in an accident,

⁵⁷ *RAFM Casualty Card*, E J Smart. (Royal Air Force List 1918)

⁵⁸ *RAFM Casualty Card* Lt R E Thomas.

⁵⁹ R. R. Grinker & J. P. Spiegel *Men Under Stress*, (New York, 1963) pp.110-113.

it does not tell the whole story.⁶⁰ In fact, Lt Cameron deliberately jumped to his death from 1000 feet above the British trench line.⁶¹ According to the personal diary of Cameron's flight commander for 7th Jan 1918:

I had put Cameron down for a practice contact patrol, as he was in bed I strafed him and sent him up. He committed suicide by jumping out of the machine. I then went up with Lt Robson to do the practice contact.⁶²

That terse (and seemingly callous) statement by Captain Cripps which may be explained by the fact that he had seen over 50 squadron aircrew killed in his six months on the squadron goes no way to explain Cameron's action, but Cameron's experiences since arriving in France do show that he may have been exposed to more than the admittedly great stress suffered by all aircrew. Cameron was a medical student who joined the RFC in 1917. After training he went to No 9 Squadron as an observer flying RE8s. By October he had been awarded his observers badge. However, apart from being attacked on three occasions whilst on patrol: he was also involved in no fewer than four aircraft accidents, two in September and two in October-all in RE8s.⁶³ As an Observer, it is likely that he had little or no control over the accidents, which can only have increased the trauma. It seems clear that Lt Cameron was severely affected by his experiences on No 9 squadron and perhaps he was unfortunate that his fragile

⁶⁰ *RAFM Casualty Card* (Incident) R B Cameron 7th January 1918.

⁶¹ P. Dye. (Air Vice Marshal) 'The Aviator as Superhero' *Air Power Review*, Vol 7 (3) 2004 pp.65-72.

⁶² Dye p.67. .

⁶³ Dye, 'The Aviator', pp.70 -74; Henshaw, *The Sky Theirs*, pp.364-365. The accidents concerned illustrate the extra stress on observers as they were all completely beyond his control, three were the result of bad landings (three different pilots) and one a failed take off due to engine failure. Added to that another Observer on 9 Squadron was involved in a fatal accident on 14th September.

state of mind was not recognised and acted upon. It is rare to find any reference to aircrew suicide in the Casualty Cards and it is not always clear that the Officer concerned is aircrew, it is estimated that the number of suicides in RFC/RAF was 12. One other case of suicide is recorded by Captain H H Balfour, who returning to France as a flight commander on No 43 squadron, tells of a Captain F, an officer who had shown a reluctance to act as flight commander and lead the flight. He refused to fly and was informed that this refusal of duty would lead to a court martial. He was ordered to go to RFC HQ: the next day he was found in the officers' latrines, having used his service revolver to shoot himself.⁶⁴

In fact, No.9 Squadron Commanding Officers in 1918 did act in several cases. Between Cameron's suicide in January and the end of fighting in November, eight officers were removed from flying and admitted to hospital, five with Flying Sickness (sent to England), one with DAH and two with neurasthenia. None of these officers returned to duty before the end of the war.⁶⁵ Of the 300 aircrew who served with No 9 Squadron between December 1915 and November 1918 some 32% served less than a month.⁶⁶ Of course, the main reason for this wastage was the casualty rate, but during this period 14% of the squadron aircrew were returned to England. It appears that apart from aircrew returned for further training a significant number were given the same sympathetic treatment given

⁶⁴ H H Balfour, *Wings Over Westminster* (London, 1973) pp.50-51.

⁶⁵ *RAFMCs for Ashford, Deane, Dykes, Neall, Rollisson. Sangway. Sawyer, Spittas*. All 1918

⁶⁶ Dye, 'The Aviator', p.71.

to Balfour. An official post-war study established that the overall monthly wastage rate for pilots on all squadrons on the Western Front was 32%.⁶⁷

As happened with the death of Lt Max Immelmann in 1916 and Verner Voss in September 1917, RFC morale was lifted by the shooting down on 12th April 1918 of Captain Baron Von Richthofen, the leading German 'Ace' whose leadership of the massed Jastas had been in large part responsible for the success of the GAF in 1917 and early 1918. His was undoubtedly the premier Ace of the War with 80 victories and he was buried with full military honours at Bertangles. His importance to the air war is exemplified by the British Official History's taking no fewer than eight pages to cover his career and death.⁶⁸ It has been said that his record of success had to some extent neutralized the psychological advantage given to the RFC by the aggressive fighting spirit engendered by Trenchard's offensive policy.⁶⁹

However, it should be noted that a great part of the impact made by Richthofen and other successful German pilots was the result of a policy of publicity and propaganda adopted the German Air Force with respect to individual victories in the air war.

The creation of so-called 'Aces' began with the French Air Force early in 1915 with the promotion by the press of Adolphe Pegoud, using five victories as the

⁶⁷ *TNA Air 1/686/21/13/2252* - Statistical data RFC and RAF 1914-1919

⁶⁸ Jones, *TWITA* Volume IV pp.389-397.

⁶⁹ Wise, *Canadian Airmen*, p.514.

yardstick to identify an Ace.⁷⁰ In Germany the process began with the inclusion of a pilot's name in the official war communiques after his fourth victory. Additional victories were also reported and after eight victories the pilot was awarded Germany's highest military decoration 'The Ordre Pour le Merite'. As the war progressed the number of victories needed to qualify for the award was increased until by late 1918 it was thirty.⁷¹ In both France and Germany considerable publicity was given to aerial victories. The first German Ace, Immelmann, was officially filmed and his aircraft put on display in Berlin. He is said to have received some 40 letters a day from admirers.⁷² The German policy of maximum publicity meant that not only were the Aces heroes in Germany, but also well known to the RFC and perhaps as important, to the public and press in England.

The British Army (and from 1918, the RAF) took a quite different view about publicising the victories of the RFC. There was a professional reticence in the British Army about all forms of publicity. Sir Douglas Haig said in September 1917 'I feel sure that the officers of the RFC are proud of being anonymous like their comrades in other branches of the British Army'.⁷³ This attitude almost certainly had a deleterious effect on morale. It is fair to add that Trenchard's position was also based on a concept of 'fairness' as he felt that the 'aces' system

⁷⁰ Morrow, *The Great War*, p.34.

⁷¹ A. Imrie, *German Air Aces of World War One*, (London, 1987), p.5. Richthofen had 21 victories when he received the order.

⁷² Winter, *The First of the Few*, p.132.

⁷³ Winter, p.133; Boyle, *Trenchard*, p. 215.

entailed a measure of injustice as it implied that those who obtained Ace status had a monopoly of courage and skill. Not everybody had the opportunities of the fighter pilots. In fact, at the end of the war only some 38% of RAF units were Scout (fighter) units.⁷⁴ Another measure of the unrepresentative nature of the 'Aces preoccupation' of press and public (in both World Wars) lies in the percentages of squadron pilots credited with victories. In No 2 (AFC) Squadron, (flying SE5a) less than 7% of the pilots accounted for 42% of claimed victories and in No 4 (AFC) Squadron (Sopwith Camel) the figures were, 5% claiming 46% of victories.⁷⁵ These differences between the Aces and other squadron pilots are even more pronounced in the cases of very high scoring pilots such as Ball and Bishop.

However, on the other hand, giving due publicity to successful operations and the award of decorations invariably enhances morale. As Admiral Karl Donitz, an outstanding leader of submarines in the Second World War said:

Where decorations were concerned, there was no correspondence and no red tape in U-Boat Command ... I regard this practice of immediate awards to those engaged upon operations as psychologically important.⁷⁶

Support for that attitude comes from one of those most concerned, the RFC aircrew, Arthur Gould Lee who survived the war to become an Air Vice- Marshal in the post war RAF, wrote:

⁷⁴ Molkenkin, *Australia and the War*, p. 159.

⁷⁵ C. G. Jefford, *RAF Squadrons*, (London, 2001) pp.48-49; Molkenkin, p.159. These two squadrons were Australian.

⁷⁶ C Donitz., *Twenty Years and Twenty Days* (Naval Institute Press, 1990), pp.118-119.

What Trenchard and those who thought like him failed to realise was that human beings need heroes, indeed crave for them especially in wartime. The fighting troops, both in the air and on the ground, need heroes to set the standards, to lead in aggressive action... especially during the black year of 1917, when disaster threatened us at sea and a future of future massacre on land. The names and achievements of our warriors of the air, the aces whom everybody could salute as heroes, should have been blazoned throughout the Empire and America...We should have built up our heroes as national assets, as did our enemies and allies.⁷⁷

One result of these contrasting policies was that German Aces were well known (and sometimes feared) by RFC aircrew and the public, whereas successful British pilots generally remained virtually unknown.

There were some exceptions to the 'no publicity' rule of the RFC, as considerable publicity was given to the RFC pilots who were awarded the Victoria Cross. By the end of the war there were seventeen RFC/RAF VCs.

In fact, as Molkennten points out the term 'Ace' is anachronistic, it is not and has never been an official description in any service. It is almost always linked to a figure of five victories, which is depicted a marker of success in the air war.

The total of 'Kills' attributed to an individual pilot is based upon subjective criteria, often the pilots own combat report. These reports are usually entered squadron war diaries and claims made to wing or brigade. Often these higher authorities amend the claims and more confusingly sometimes 'share' victories between pilots. This is a difficulty with French And American claims which give a full credit to each pilot involved. If two pilots contribute to one victory both get the credit. These Air Services also awarded victories to both pilot and

⁷⁷ Lee. *Open Cockpit*, pp.182-183.

observer/gunner in two-seater aircraft. Thus, there is often a variation between numbers of victories attributed to individuals.

There is also the problem of 'over-claiming. All air services over-claimed to some degree'. In September 1918, the RAF claimed three times as many German aircraft destroyed as were lost.⁷⁸ Some over-claiming is due to a reasonable wish to boost individual and squadron scores, more perhaps to the inevitable confusion of air fighting, especially in the last months of 1918 when perhaps dozens of aircraft could be involved. Another factor affecting claims was the improved performance of aircraft. By 1918 aircraft could fly three times as high as in 1915, achieve speeds of over 150 mph and firepower was more than doubled. In these circumstances it is likely that any pilot who tried to follow his opponent down or even watched what happened to him would be attacked himself.⁷⁹ The over-claiming considered above can reasonably be considered an inevitable consequence of the realities of air fighting.

The Germans credited some six or seven aces with more than 35 victories and there is little doubt about most of these victories as many of the shot down aircraft came down in German territory (often with the British crew captured) because of the RFC's offensive policy. On the British side there were thirteen pilots who

⁷⁸ M, Molkentin, *Centenary History of Australia and The Great War Volume I Australia And The War In The Air* (Oxford University Press, 2014), pp.160-161.

⁷⁹ Jones, *TWITA* Vol IV pp.231-245 & pp.286-290; Molkentin, *Australia and the*, pp.165-167; Wise, *Canadian Airmen*, pp.572-575.

claimed 40 or more victories and another ten claiming more than 30.⁸⁰ It is right to say that most of these pilot's claims were accepted under the RFC system of requiring corroboration by other pilots or from the ground or if possible the actual downed aircraft. But a few RFC pilots (due to their reputation or a helpful Squadron Commander) could fly on individual sorties into German air space on hunting forays. Albert Ball and Billy Bishop were two, but not the only two, who claimed victories which by their very nature could not be corroborated. However, while there has been little question regarding most of Ball's victories, the position is quite different in the case of Bishop. Bishop's case is controversial both for its facts and because questioning the record of Canada's premier airmen and a VC holder is difficult. The first person to question Bishop's veracity was a fellow No 60 squadron pilot, William Fry (MC). On the 4th May 1917, he was tasked to fly with Bishop, his flight commander, to chase away an enemy reconnaissance aircraft. They got airborne but failed to catch the aircraft and having fired a few shots in its direction they returned to base. After the flight Bishop asked Fry if he had seen the aircraft 'go down' Fry had not seen this happen, but Bishop was allowed his victory.⁸¹ Fry was also with 60 Squadron on 2nd June. when Bishop carried out his attack on a German airfield (alone) when he claimed to have destroyed three German aircraft. Bishop said

⁸⁰ List from Ira Jones *Tiger Squadron* p 286, the over 40 victories names, Mannock, Bishop, Collishaw, McLaren, Fullard, Barker, Beauchamp-Procter, Liittle, Ball and Larkin. Also J T B McCudden *Flying Fury* (London, 1968) Appendix List of Aces Britain, Germany, France, American, Russian, Austria-Hungary.

⁸¹ W M Fry MC. 'The Bishop Affair' *Cross and Cockade* Vol 32 (1) 2001 pp.38-45. RFC HQ Weekly Communique No. 86 29th April-17 May 1917 – 4th May notes this flight.

that he got lost on the way back and landed to ask the way. This was the flight for which Bishop was awarded the Victoria Cross.⁸² Fry with others, including ground personnel, inspected Bishop's aircraft and suspected that the bullet holes in Bishop's aircraft had been inflicted from very close range (Bishop claimed that damage meant that he had to throw away his aircraft machine gun on his way back).⁸³ Fry points out that there was some concern on the squadron, particularly about the Commanding Officer seemingly easily accepting Bishop's story. The Victoria Cross regulations in force at the time called for 'conclusive proof as far as the circumstances will allow, and attestation of the act'.⁸⁴ In this case Major Scott No 60 Squadron Commanding Officer went direct to 3rd Army Commander (General Allenby) with Bishop's combat report and shortly afterwards in August 1917 the VC was awarded.

In fact, Bishop may have been the beneficiary of several factors including Scott's ambition, pressure by well-known persons in England and faulty administration by Army Command and perhaps, the state of RFC morale.⁸⁵

At that time, the summer of 1917, RFC morale was in almost the same parlous state as it had been in 'Bloody April', fearsome casualties were being replaced with novice pilots and observers, many of whom did not last long, aircrew themselves were questioning the rational of their sacrifice:

⁸² RFC HQ Weekly Communique No, 91, 1-7 June 1917- 2nd June

⁸³ Fry, *The Bishop Affair*, p.42. Bishop claimed that he had had to throw away his aircraft machine gun on the way back.

⁸⁴ M. J. Crook, *The Evolution of the Victoria Cross* (Ogilvy Trust, 1975), Appendix XIII, para eight.

⁸⁵ Wise, *Canadian Airmen. Comments* "This must surely be a very unusual case of a Victoria Cross being awarded on the word of the recipient only as to his exploit and without any witness or participants" ' p.414.

There was hardly an evening when the same people gathered in the mess. It was here that a certain amount of frank and free comment on our casualty rate could be heard..... our commanding officer discouraged it, but it continues.

This feeling, although officially looked on as defeatist was prevalent among operational pilots Officers of the higher command, from Major General Hugh Trenchard down to the commanders of wings, according to the critics were throwing away aircraft and lives for no discernible purpose.⁸⁶

An award of a VC would: as it had done before, give a boost to morale, especially the replacements arriving at the front. Because there was no Canadian Air Force in the First World War Canadians enlisted directly into the RFC/RAF and it is estimated that in the last two years of the war some 25% of RFC/RAF aircrew were Canadian.⁸⁷ Additionally, some 11% of RFC/RAF casualties throughout the war, were Canadian⁸⁸. In these circumstances it does not seem unreasonable to believe the War Office and the Government would take the chance to award of the highest gallantry decoration to a Canadian.

Following Russia's defeat in the east and the Treaty of Brest-Litovest, which ceded to Germany huge amounts of territory, 50 million inhabitants and substantial economic resources, the Germans began the transfer of some 1 million troops to the western front.⁸⁹ Both the French and British Commands were

⁸⁶ B. Greenhous., 'Billy Bishop-Brave flyer, Bold liar' *Canadian Military Journal* Autumn 2002 pp.61-64, p.63 quoting Oliver Stewart, Words and Music for a Musical Man.

⁸⁷ Wise, *Canadian Airmen*, Appendix C - discussion of numbers of enlistments and outcomes.

⁸⁸ Ibid, p.647.

⁸⁹ A. Watson., *Ring of Steel* (London, 2015) pp.494-495.

expecting a German Offensive in early 1918 and Haig and Trenchard were concerned to gain and maintain the RFC's air superiority.

The RFC's latest aircraft, the Sopwith Camel, SE5a, Bristol Fighter and the DH4 and the use of new tactics such as the larger formations and low-level ground attacks had at least some temporary superiority in the air ⁹⁰ Nevertheless, even though increasing numbers of aircrew were being produced by the training organisation and the Canadian schools were producing significant numbers of aircrew; casualties and wastage from accidents continued to be a serious concern for the RFC. To add to the difficulties, there were conflicts between the RNAS and RFC regarding resources (men and materials). The RNAS, sourced its aircraft and engines from aircraft and engine manufacturers of its choice. On the other had the Army (RFC) depended almost entirely on aircraft designed and produced by the Royal Aircraft Factory at Farnborough, (established 1905) but as its official role was to design and test aircraft, the actual manufacture of aircraft and engines was often contracted out.⁹¹

This situation caused considerable disquiet, partly because of the Royal Aircraft Factory's monopoly of aircraft for the RFC, but also because the performance of aircraft produced by the factory was often below that of civil manufacturers. The 'Fokker scourge' of 1916 and the continuing serious losses of 1917 brought the matter to a head. At first a Committee was set up to ensure co-ordination and

⁹⁰ Henshaw, *The Sky Their*, pp.139-140.

⁹¹ P. R. Hare, *The Royal Aircraft Factory*, (London, 1990) p.78.

control of aircraft supply. It lasted two months. Next an Air Board was formed, with Army and Admiralty representatives included. This body found itself in conflict with the newly created Ministry of Munitions, which demanded absolute priority for machine tools which were used for aircraft construction.

At this point there was a change of Government Asquith being replaced as Prime Minister by David Lloyd George and a small War Cabinet was formed. The powers of the Air Board were increased, but crucially the responsibility for supply of aircraft and aero engines was transferred from the Admiralty and War Office to the Ministry of Munitions.⁹² This Ministry at once laid down a programme to supply 2000 aero engines per month by autumn 1917, but was unable to make a similar advance in aircraft production. It was to help cover this shortfall in aircraft production that some naval fighter squadrons were temporarily transferred to the RFC.⁹³ Even with the naval squadrons, the RFC was still short of the number of squadrons needed in France at the time, 50 as against 57. The general shortage of aircraft, especially fighters, came to the governments, and public's, attention dramatically with the first German bomber raids on London. The first attempt was made on 17th May 1917: but owing to bad visibility, the 21 Gotha twin engine Gothas turned south and bombed Folkstone, 95 people were killed and 195 injured. The UK defences both anti-aircraft and

⁹² Jones, *TWITA* Volume VI pp.29-30.

⁹³ Jones, *TWITA* Volume VI p.31.

fighters were confused and completely ineffective.⁹⁴ The next attack took place on 13th June when fourteen Gothas bombed the East End and 160 people were killed and 414 injured. This time no fewer than 95 sorties were flown by British Fighters, but no damage was caused to the raiders.⁹⁵

The Commander of the German No 3 squadron which led the attack, exposed the failure of the British defence:

London was reached by seventeen aeroplanes. The visibility was exceptionally good. With perfect clearness, the Thames Bridge, the railway stations, the city, even the bank of England, could be recognised. The anti-aircraft fire over London was not particularly strong and was badly directed. Many fighting aeroplanes had, meanwhile nearly the height of the squadron. In all, sixteen enemy aircraft which flew independently, were counted. The number which ascended may rightly be estimated was about thirty. Only one of them attacked. Our aircraft circled round and dropped their bombs with no hurry or trouble. According to our observation, a station in the city, and a Thames Bridge, probably Tower were hit.⁹⁶

Following an urgent Cabinet meeting it was decided that the strength of the flying services should be doubled. Trenchard was consulted about the feasibility of standing fighter patrols and he pointed out that these would be very costly in aircraft and pilots. The question was then raised of using squadrons from France to boost the defences. Trenchard reluctantly agreed with this proposal, stipulating that squadrons should be returned to France by 5th July.⁹⁷ Accordingly, Nos 56 and 66 Squadrons were allocated for Home Defence duties on 21st June. As agreed the two squadrons returned to their bases in France on

⁹⁴ C. Cole & E. F. Cheeseman., *The Air Defence of Great Britain 1914-1918* (London, 1984) p.213; Jones, *TWITA* Vol V pp.18-40; Henshaw, *The Sky Their*, pp.261-265.

⁹⁵ Cole & Cheeseman, *The Air Defence*, p.213.

⁹⁶ G. P. Neuman., (trans J. E. Gurdon) *The German Air Force in The Great War*, (London,1920) pp.164-165; Jones, *TWITA* Volume V pp.27-28.

⁹⁷ Jones *TWITA* Volume V pp.213-214.

the 5th and 6th of July and with what one writer described as an ‘uncanny sense of timing’, on the morning of 7th July the Germans launched their second London raid with twenty-one Gothas.⁹⁸ Although some thirty RFC aircraft contacted the Gothas only one was shot down. Two RFC aircraft were lost with their crews killed. Public indignation reached new heights at the way the enemy could still raid the heart of London in broad daylight, even though this time casualties were less, mainly because many people took cover. The Cabinet responded immediately by again recalling squadrons from France, but also, and more important in the longer term, set up a committee under the chairmanship of Lieutenant-General J C Smuts to hold an investigation into the last two raids and favour the War Cabinet with his views ‘as to the provision for the civil population in the future, and his proposals as to carrying the air war into Germany at the earliest possible moment’.⁹⁹ Smuts in fact produced two reports, the first which presented on the 19th July dealt comprehensively with all aspect of air defence and its organization and which was accepted by the Government.¹⁰⁰

The second report produced on 17th August 1917, about which the Official history of the service states: ‘It is the most important paper in the history of the creation of the Royal Air Force’, set out (after a long account of the operations and command and control of the RFC and RNAS) eight recommendations, of which

⁹⁸ Cole & Cheeseman, *The Air Defence*, p. 216.

⁹⁹ Jones, *TWITA* Vol V p.64.

¹⁰⁰ Jones, *TWITA* Vol V pp.41-41. The details of this reorganization and command of the Home Defence are not relevant to this study.

the three most important were (1) That an Air Ministry be instituted as soon as possible ... to control and administer all matters in connexion with aerial warfare. (2) That an Air Staff be instituted on the lines of the Imperial General Staff, responsible for War Plans, Operations, Intelligence, and training. (3) The Air Staff and the Air Ministry arrange as soon as possible, the amalgamation of the Royal Naval Air Service and the Royal Flying Corps and to prepare the necessary draft legislation for its constitution and discipline.¹⁰¹ The government accepted all Smut's recommendations and an Air Force Bill was introduced into parliament and received Royal assent on 29th November. On 2nd January 1918 the Air council was formed with Trenchard named as Chief of the Air Staff and he was relieved of his command in France to take up this post.¹⁰² Trenchard agreed to serve although he was against the proposal for a unified air service (as was Haig) and had never attended staff college or served on the General Staff.¹⁰³ The amalgamated service 'The Royal Air Force' came into existence on 1st April 1918.

Before he left, Trenchard prepared a memorandum 'The Employment of the Royal Flying Corps in Defence' which was issued in January 1918. The first duty of the RFC was to detect through reconnaissance the enemy's logistical build-up before battle and then to hamper it through bombing. Once an offensive had

¹⁰¹ Jones, *TWITA*, Appendices appendix II.

¹⁰² Jones, *TWITA*, Vol VI pp. 22-23; Boyle, *Trenchard* pp.251-255.

¹⁰³ B. Collier, *A History of Air Power*, (London, 1974) pp.74-75; Wise, *Canadian Airmen*, pp.280-284.

begun the principal duty of the RFC was to '*render our artillery fire effective*'. Beyond that the RFC was to attack enemy reinforcements, road transport, artillery positions and finally (partly for its effect upon enemy morale) to carry out low level attacks on advanced troops,¹⁰⁴ Trenchard's successor as RFC/RAF Commander. Major-General J M Salmond, accepted both the memorandum and significantly, Trenchard's offensive philosophy:

This can only be done by attacking and defeating the enemy's air forces. The action of the Royal Flying Corps must, therefore, always remain essentially offensive.¹⁰⁵

The new commander of the Royal Air Force was faced with the immediate problem of aircrew wastage. It had been realised that despite the RFC/RAF having superior numbers, the German pilots were more experienced and more successful. They had been carefully selected and had often been given special courses of training at fighter schools. By comparison, RAF aircrews were often inexperienced, in large part due to the unexpected wastage rate which had caused training times to be reduced.¹⁰⁶ As early as July 1917, Henderson had told the War Cabinet:

The actual requirements of pilots are very largely governed by the casualties. Wastage from all causes has hitherto been so great that, although we have succeeded in increasing the strength considerably, yet we have never been able to give pilots as much training as would be desirable.¹⁰⁷

There had been some improvement in pilot training; the average flight time of pilots arriving in France had increased from 15.5 hours instruction in April to

¹⁰⁴ Jones, *TWITA* Volume IV pp.277-279.

¹⁰⁵ Wise, *Canadian Airmen*, p.480; Jones, *TWITA* Volume IV, Appendix XIV p.446.

¹⁰⁶ Jones, *TWITA* Volume V pp.468-469.

¹⁰⁷ Jones, *TWITA* Volume V p. 470.

48.5 hours per pilot by November, but the size of the replacement problem was emphasized by the wastage rate of pilots, which in 1917 and 1918 was 600% per annum.¹⁰⁸

In late February and early March 1918, intelligence assessments indicated that the Germans were preparing for a new offensive. RFC reconnaissance and photographic flights added to the flow of information and on 18th of March a captured German pilot revealed that the attack would begin on the 21st March.¹⁰⁹

At the opening of the German Offense on that day the RFC had 31 squadrons on the British Third and Fifth Armies front, a total of 579 aircraft of which 261 were single seat fighters. German aircraft operating with the three German Armies involved totalled 730, of which 326 were single seat fighters.¹¹⁰

This was the first time in the war that German air strength was greater than British on the Western Front. The RFC plan for operations during the expected German attack was that all corps aircraft would be engaged on artillery patrols, photography, harassment of enemy troops and if possible, night bombing. The Army squadrons would concentrate on escort and protection of the corps aircraft and would also carry out low level attacks on enemy troops and low-level bombing. One squadron (No 48) was to be held back for long range reconnaissance. As was to be expected, events overturned this orderly plan and in the event most squadrons were tasked at some time with low level

¹⁰⁸ Jones, *TWITA* Volume V p.471.

¹⁰⁹ Jones, *TWITA* Volume IV p.269.

¹¹⁰ Jones, *TWITA* Volume IV p.273.

operations to assist British troops when attacked by large numbers of German Aircraft.¹¹¹ The German Air Force had been preparing for the offensive with a programme of expansion and had also reorganised their air service by doubling the fighter flights to from forty to eighty and for low level attack units to be protected, the so called Battle Flights were reorganised. The strengths of these flights were increased to; 14 Fighters, 6 Reconnaissance, 9 Artillery spotting, 6 Bombers and 6 photographic reconnaissance aircraft. In March 1918 there were 38 battle flights on the western front (eight transferred from Russian front).¹¹² This emphasis on low level operations was partly in response to German army complaints about the effect upon the morale of German troops of seemingly unopposed RFC ground attack aircraft.¹¹³

The RFC's (soon to be RAF) last battle started at 0445 hrs on 21st March 1918 along the front line of Britain's Fifth Army and extending to the adjacent Third Army, when forward and battle zones, lines of communication, head-quarters and positions to a depth of twenty miles behind the lines, were suddenly subjected to a prolonged and fierce bombardment. This was followed at about 0800hrs by the advance of German infantry led by specially trained 'sturmmtruppen' (storm troopers), supported by 730 German aircraft.¹¹⁴ The initial attack behind a

¹¹¹ Henshaw, *The Sky Their*, pp.151-152; C Bowyer, *Royal Flying Corps Communiques 1917-1918* (London, 1998) RFC HQ weekly Communique 132 19-25th March 1918; G Norris, *The Royal Flying Corps: A History* (London, 1965) pp.234-235.

¹¹² Jones, *TWITA* Vol IV p.275.

¹¹³ R. B. Asprey, *The German High Command At War* (London, 1994) p.385 & p.407.

¹¹⁴ P. J. Daybell., 'The March Retreat of 1918; The Last Battle of the Royal Flying Corps' *Journal of The Royal Air Force Historical Society* 122 (2000) pp.107-126; Sheffield, *Forgotten Victory* p.225; Jones, *TWITA*, Vol IV p.293; Avery, *The German High*, p.382.

‘creeping barrage’ was very successful aided by the dense fog which covered the battle field and prevented RFC aircraft, airborne despite the fog, making any impact on the battle until the weather improved later in the day, Air fighting was intense in the afternoon and evening as the weather cleared and German aircraft began to appear in large numbers over their advancing armies. By mid-afternoon, the Corps Squadrons were reporting the German advance and in the Third Army area the RE8s of No 59 Squadron were reporting heavy damage to both the line and wire. The spotting aircraft repeatedly tried to call down artillery fire on the advancing enemy troops clearly seen moving towards the front, but without response.¹¹⁵ The Official History explains why the aircraft were ignored, explaining the chaos and confusion at this time:

The chief causes of failure were the severance of telephone communication and the breakdown of the artillery wireless organisation; batteries were continually on the move; much telephone and wireless equipment was lost or damaged; and when batteries halted they did not always erect their wireless masts. The majority of calls sent down in the first days of the battle were not answered whilst the observers were waiting to observe the fire effect.¹¹⁶

The covering fighters were soon in action and on the first day of the battle some thirty-nine combat actions took place in V Brigade, supporting British Fifth Army and thirty-two in III Brigade supporting British Third Army. In fact, this day was an example of the propensity of pilots in all services to ‘overclaim’ victories

¹¹⁵ Wise, *Canadian Airmen*, p.491.

¹¹⁶ Jones, *TWITA* Vol IV p.294; Wise, p.491; Daybell, p.117.

in combat. On the 21st British pilots claimed twenty-five enemy aircraft destroyed and the Germans nineteen; the actual figures were eight and two.¹¹⁷

By the second day of the battle almost all the RFC squadrons on these Brigades were spending a large part of the operational effort on close support, ie low level ground attacks on the advancing Germans. On the 27th March low level strikes on the still advancing Germans began at dawn. Although, as we have seen, casualties in these attacks were high there was considerable variation in the loss rates between squadrons. This was due in part to how ground defences differed in some sectors; but there was also a discrepancy in skill and experience between pilots and leadership of Squadron and flight commanders. For example, No 84 Squadron (led by Sholto Douglas) escaped lightly, but in No 70 Squadron casualties were high. Even though pilots would arrive with forty hours solo experience (pitifully small by today's standards, but double 1916 standards) there was no time to give them squadron training, but were sent straight into the line.¹¹⁸

The number of casualties due to flying sickness in 1918 in these squadrons reflected their casualty rates, six in No 70 and Three in No 84.¹¹⁹ An example of the stress engendered by low level work, is that of Arthur Cobby the 24 year old highest scoring Australian pilot who said that once he got involved in troop strafing he could no longer eat because of overstrain, nervousness, and a mixture

¹¹⁷ Henshaw, *The Sky Their*, p.151; Wise, *Canadian Airman*, p.492; Jones, *TWITA* Volume IV p.298; Daybell, p.114.

¹¹⁸ Barker, *The Royal Flying Corps*, p.452.

¹¹⁹ *RAFM Casualty Cards for 84 and 70 squadrons. 70 Sqdn, RAFM CC Copp, Dawson, Jones. Linford Petsculer Todd, Wood. 84 Sqdn RAFMCC Grosvenor, Highwood, Lason.*

of fear and hypertension. He lived on champagne and brandy and the occasional biscuit. Yet air combat never worried him, he achieved 29 victories and survived the war.¹²⁰

Added to the strain of casualties and exhaustion the crews of the RFC had an additional worry. On 22nd March, the seriousness of the situation caused the RFC to pull back from threatened airfields. All seventeen squadrons supporting Fifth Army and five in support of Third Army, evacuated their airfields. As noted by the Australian Official History:

So quickly did these evacuation orders come, that many British pilots who flew on a patrol in the morning would return a few hours later to find the whole of their squadrons' personnel gone to some unknown destination—in some cases without their stores and equipment---and the aerodrome being shelled by the enemy. This naturally disorganised those squadrons. The pilot would avoid landing if the aerodrome was being shelled and fly on to a place of safety—perhaps choosing, as he thought, a flat quiet field. He was often handicapped by shortage of petrol and in some cases, he had to remain with his machine for several days before he could get petrol or make communication with his squadron again.¹²¹

After being slowed temporarily the Germans launched the second phase of their offensive on 9th April, and the war in the air again intensified and at times the sky was described as 'full of aircraft' as each side strove for air and battlefield supremacy. From the start of this second phase of the offensive, until the end of June when it was finally halted, the (now) RAF casualties were 695 killed or missing in action and 99 killed in accidents. A further 120 aircrew were wounded in action.¹²² The total of 1114 aircrew from the approximately 1760 aircrew

¹²⁰ E M Cutluck, *Official History of Australia In The War Of 1914-1918 Volume VIII, The Australian Flying Corps* (AWM, 1923) pp.292-293; Barker, *The Royal Flying Corps*, p.452

¹²¹ F. M. Cutlack, *The Australian Flying Corps*, pp.233-234.

¹²² Jones *TWITA*, Appendix XXXVII; Henshaw, *The Sky Their*, pp.163-186.

serving at the front is a wastage rate of approximately 65%, all of whom required instant replacement; which explains both the strain on the training organisation in the Home Establishment and why the loss rate remained so high among new and inexperienced replacements, who have little chance of living long enough to get experienced. The great increase of ground attack operations during the German offensive with their high loss rate had a significant impact on these figures. However, the efforts of the RFC /RAF did make a valuable contribution as noted by the Australian Official History:

A thorough examination of the action of the Allied air forces at this critical time before Amiens, in the closing days of March, makes it almost certain that, while it was the heroic infantry of outnumbered British and French divisions which held up the enemy advance---and the Australian divisions played a glorious part in the later stages----it was principally the untiring exertions of the airmen in delaying, damaging, and disheartening the enemy's reserves, and throwing his whole transport system out of gear, which enabled the Allied infantry to succeed.¹²³

Although all squadrons whatever their role at some time took part in ground attacks, No 46 Squadron was the only fighting squadron on the Third Army front to be used solely for ground attacks during the German offensive. In those first weeks the squadron suffered six pilots killed in action/ PoW and several wounded and in the period, April to June, three pilots were removed from duty suffering from Flying Sickness.¹²⁴

¹²³ Cutlack, *The Australian Flying Corps*, p.237.

¹²⁴ Henshaw, *The Sky Their*, pp.152-184; *RAFM Casualty Cards*, C H Cahill, F H Cave, D W Foreshaw. Cahill was still in a military hospital in 1919; Cave initially returned to duty after a short rest, but was later removed from flying to a London hospital with a further diagnosis of Flying sickness; Foreshaw was sent to London Hospital in August 1918.

The Germans were to carry out further offensives in May and June, but these were less powerful, and their advance was finally halted at the end of June. In August the Allies were able to undertake a counter offensive which proved finally to win the war. In the final three months the fighting in the air and especially ground attack actions in support of the now advancing British Armies was the most intense of the war. In August 1918, after another adjustment to the RAF organisation in France, there were 93 Squadrons in the order of Battle plus two independent flights and 43 Kite Balloon sections. The number of aircraft available was 1,782, including those of the Independent Force.¹²⁵

In late July arrangements were made between General HQ and Major General Salmond for the employment of the RAF in the planned offensive. One important aspect of the plans was the extensive use of bombers and ground attack aircraft particularly against German Airfields. The British Air strength available in the proposed battle area was 800 aircraft, over five brigades, comprising 41 squadrons. Of these aircraft 376 were fighters, 110 were corps aircraft, 342-day bombers, 144 were night bombers and 140 were fighter reconnaissance. Additionally, the French were to support the offensive (involving French First Army) with 1,104 aircraft giving a total British and French to of 1904, which was vastly superior to the German available aircraft in the battle area of about 365.

¹²⁵ Jones, *TWITA* Appendices, - Appendix XXIV pp.116-125.

(However, also available was another 850 aircraft in Champagne with the German Sixth and Seventh Armies)¹²⁶

One very unusual action before the offensive was a memorandum from Brigadier-General L E O Charlton, commanding V Brigade to be communicated ‘to all pilots and Observers’ on the afternoon before the opening of the offensive, because:

each pilot and observer should be fully informed of the general plan in regard to the preliminary operations, such knowledge helping him to a wider appreciation of course of events as they unfold and rendering more valuable in consequence his action and reports.¹²⁷

This seems to be the only time that a Brigade commander felt it necessary to approach aircrew directly to inform or encourage them. Charlton was one of the original pilots went to France in 1914 and had previously shown himself to especially aware of the welfare of aircrew. In 1917, when serving in the Directorate of Military Aeronautics, he made it a positive requirement that no pilot should be sent to France unless they could satisfy his department of their competence. He was overruled by Henderson, presumably because of pressure from France.¹²⁸ As noted above Charlton was critical of the ‘all-out’ offence policy.¹²⁹

¹²⁶ Jones, *TWITA* Vol VI pp.435-436; Wise, *Canadian Airmen*, pp.522-523.

¹²⁷ Jones, *TWITA* Vol VI p. 436. The Memorandum is set out in the Appendices to *TWITA*, Appendix XXV p 123

¹²⁸ Barker, *The Royal Flying Corps*, pp.278-279.

¹²⁹ L Charlton, *War from The Air* (London,1935) pp.56-57.

Another reason for Charlton's memorandum may have been his concern about the command arrangements for the air support of the offensive. There was no overall commander in the air. Charlton was directly under command of the Fourth Army, while Brigadier-General Salmond, RAF Commander, was responsible for IX Brigade and the support from I, III, and X brigades, and was given authority to deal directly with General Rawlinson. It seems probable that Charlton wanted to ensure that at least his brigade aircrew were informed of their objectives (he emphasised the importance of attacking anti-tank guns to support the tanks) and to give them his personal encouragement. In fact, like other commanders Charlton assumed that the attack had limited objectives and had planned for a one-day battle.¹³⁰

For the RAF, the 8th August was the most important and complex day of fighting so far. The RAF's main role was to support the ground assault through contact patrols (low level) and low-level attacks in support of troops and tanks. Many attacks on enemy airfields had been planned and most were carried out, but were not entirely successful and the GAF continued its stiff opposition.¹³¹ Additionally, bad weather, (mist and fog) the unexpected quick advance of the Army, (seven miles on first day) and most of all the changes to the air plans by the ordering of a new offensive against the Somme bridges, caused considerable confusion. There were eleven Somme bridges, thought to be an escape route

¹³⁰ Wise, *Canadian Airmen*, p.524.

¹³¹ Henshaw, *The Sky Their*, p.196.

for retreating German troops, which were to be bombed '*as long as weather and light permits*'¹³² and this plan almost certainly led to the 8th August being the worst day of the war for the RAF, there is no other day when casualties come anywhere near those suffered on this day.¹³³ All the bridges were within easy distance of German airfields and most of the attacks were carried out at low level and apart from the exposure to ground fire all the aircraft which would have protected attackers from GAF fighters were themselves engaged on ground attack operations. The RAF lost 45 aircraft during the day (40 aircrew KIA/PoW) and another 52 aircraft had to be struck off as too badly damaged for further use), a wastage rate of 13%, for one day.¹³⁴ The Germans claimed that on that day 85 British aircraft had crashed behind their lines¹³⁵ The bridges were not destroyed, and the German Army continued to use them. The Official History, unusually, examined '*whether the sacrifice was as essential as appeared at the time*' the conclusion was that it was not.¹³⁶ The RAF could probably not have destroyed the bridges, even without German opposition as the weapons (bombs) were not big enough and aiming was too difficult as a direct hit or hits were needed to destroy a bridge.¹³⁷ However, it was not only the RAF which suffered in the battle over and around the bridges. The GAF was forced to fight whatever its

¹³² Jones, *TWITA* Vol VI p.441. Order by Salmond, PM 8th August

¹³³ Jones, *TWITA* Vol VI pp.445-446. The 'wastage' on low flying attacks on German troops was 23%

¹³⁴ Wise, *Canadian Airmen*, p.534. There were also approximately 20 aircrew wounded. Henshaw, *The Sky Their Battlefield*, pp.197-198 records 23 KIA and 28 POW

¹³⁵ G P Neuman (translated by J E Gurdon), *The German Air Force In The Great War (London, 1920)* p.234.

¹³⁶ Jones, *TWITA* Vol VI p.457.

¹³⁷ Jones, *TWITA* Vol VI p.458.

losses as it was vital to protect the Army's vital communications and in fact the German losses were such both in aircraft and more importantly experienced aircrew, (48 German aircrew were lost on that day) that in future the use of very large formations was ended and from then on German aircraft generally flew in groups of eight to ten aircraft at low level (about 4,000feet).

From September until the Armistice, the Allied Armies were in continuous advance. On the 30th, the Hindenburg line was attacked and the last campaign in Flanders began on 28th. With the successes of these offensives, it was clear that German defeat was only a few weeks away. In fact on 5th September RAF HQ issued instructions curtailing RAF operations; instructing Squadron Commanders, that unless the enemy adopt an aggressive policy, the RAF policy of seeking out and destroying enemy aircraft '*will be less actively pursued*' and asking Brigadiers to reduce the number of squadrons working over the line to a minimum each day and to take individual squadron off this work for a day or more at a time.¹³⁸

Notwithstanding that instruction, the air battle continued causing heavy casualties on both sides. The scale of air fighting during this period is shown by the casualty figures. Between 1st and 30th September, the RAF 'wastage' in operations supporting the Allies advance was killed in action 232: PoW 190., wounded in action 12. Additionally, killed in flying accidents 26, injured in flying accidents

¹³⁸ Wise, *Canadian Airmen*, p.557; Jones *TWITA* Vol VI p.500.

18. and interned 17. (15 in Holland and two in Luxembourg).¹³⁹ The total number of aircrew serving in the 96 RAF Squadrons in France was approximately 2400, the losses being 20/25% of the force in one month.

The closing days of October saw some of the heaviest fighting of the entire war, some of the enemy formations containing up to fifty aircraft as the German air force made desperate efforts to protect its Army from the RAF bombers and strafing aircraft.¹⁴⁰ On the 30th, the heaviest single days fighting of the entire war took place, some 67 enemy air craft were destroyed, and 47 RAF aircrew were lost, resulting in 12 aircrew killed in action, four who died of wounds, and 10 becoming POWs.¹⁴¹

It was as well that the end was near as the RAF was having considerable difficulty in finding replacement aircraft for those lost in France, the main problem being a shortage of engines. The shortage of aircraft resulted in some squadrons operating with less than the established number of aircraft thus reducing operational sorties, especially low-level attacks which were very expensive in both aircrew and aircraft loss or damage.¹⁴² The last great air battle of the war took place on 4th November, the German Air Force made a last

¹³⁹ Henshaw, *The Sky Their Battlefield*, pp.212-231, pp.373-375. 13 of the flying accidents in September involved Sopwith Camels, confirming its handling problems. It is fair to add that once the aircraft was mastered pilots were appreciative of its combat abilities.

¹⁴⁰ Cutlack, *The Australian Air Force*, pp.319-317.

¹⁴¹ Jones, *TWITA* Vol VI pp.548-549; Henshaw, *The Sky Their Battlefield*, pp.241-242.

¹⁴² Jones, *TWITA* Vol VI p.491.

desperate effort mitigate the losses of the German Army. Losses on both sides were heavy, RAF casualties were 25 killed in action and 15 POW. Fighting continued until the end and possibly the last RAF aircrew to be killed died because of a collision between two 46 Squadron aircraft on 10th November. Shortly after 0900 hrs two Camels of No 46 flown by 2Lt G E Dowler DFC, a Canadian and 2Lt W G Coulthurst were engaged on strafing operations when they collided killing both pilots. It is appropriate to quote from a witness to that collision, who gives a sobering description of the results of strafing and bombing the retreating German Army Lt Richmond Viall said:

We went out on a squadron sweep of trench strafing, and I might say that trench strafing was about the bloodiest work we had to do. We found a long straight road filled with retreating German supply trains. We saw horse-drawn artillery, motor trucks, infantry and other military equipment of one kind and another. We formed a big circle and dropped our 25 lb bombs. When we got through with that road it was one unbelievable scene of chaos, with dead horses, lorries and dead soldiers all over the road. As I went down the last time to use up the last of my ammunition and bombs, the two planes in front of me collided. In one of them was a chap by the name of Dowler, who had been a schoolteacher in Calgary. We had joined up on the same day in Canada, but he came to the squadron later than I did. He was a damned good pilot.¹⁴³

Notwithstanding the heavy losses, morale seems to have been high during the last few months of the war. Firstly, the increase in aircrew confidence with the introduction of the Sopwith Camels, SE5s, Bristol Fighters and later the Sopwith Dolphins. Perhaps also, despite the heavy casualties, there was a realisation that finally success and the end of the war was near.¹⁴⁴

¹⁴³ Interview with Lieutenant Richmond Viall, No 46 Squadron *Cross & Cockade* Vol 11 (1961) pp.248 -249.

¹⁴⁴ Wise, *Canadian Airmen*, p.557; Jones, *TWITA* Vol VI pp.556-558.

The total of RFC/RAF casualties on the Western Front in the period 1914-1918 was 7221, comprising, 2954 KIA, 1837 PoW and 2216 WIA, with a further 802 aircrew killed in accidents.¹⁴⁵ Among those casualties were some 162 NCO aircrew killed and 89 who became POWs; several NCOs were treated for psychiatric or psychological conditions.

Some 672 Aircrew in all were removed from flying either temporarily or permanently for 'Flying sickness' (including 51 aircrew of The Independent Force and thirty balloon observers). Compared with the many thousands of soldiers taken out of the line suffering from shell shock, the numbers are infinitesimal. But as the aircrew strength of the RAF on the western front at any time in 1918 was a little over 3000, the casualty figures (2446 a rate of 76%) for that year were close to being unsustainable. The further loss in 1918, of over 600 (18%) aircrew for psychological or nervous conditions was clearly a significant factor in aircrew wastage in late 1918, when the training and replacement of aircrew was fallen behind requirements.¹⁴⁶

Chapter eight examines the work of the Independent Force formed to carry out the strategic bombing of German cities. The operations of the IF were a development of the early bombing raids of the RFC and the RNAS, but the flight times were longer, at greater heights and often at night. Although the force operated for only the last five months of the war, cases of flying sickness on those

¹⁴⁵ Henshaw, *The Sky Their*, p.344 & p.347.

¹⁴⁶ Jones, *TWITA* Volume V pp.427-428 and chapter two of this thesis.

four squadron which operated for five months were above the average for other RAF fighter and reconnaissance units.

Chapter Seven

Bombing and the Independent Force

This chapter will examine the operations of the Independent Force, (IF) formed in June 1918 to undertake long range bombing attacks on German industrial targets. The raids flown by the Independent Force were of a different nature

to previous RFC/RAF operations with greatly extended flying times at high level, often in bad weather. The day bombing squadrons faced continuous German fighter attacks with consequent heavy casualties. At first the night bombers

faced only ground fire, but in the later months of the campaign following German reorganisation fighters were also encountered.

The IF carried out day raids with Numbers 55, 99 and 104 Squadrons and numbers, 97, 100, 115, 215 and 216 operated by night.¹ Numbers 99 and 104 squadrons operated DH9 Bombers and 55 flew DH4s. All three squadrons experienced heavy casualties (causing the withdrawal of 99 and 104 squadrons from operations for short periods) which together with the large influx of untrained aircrew replacements, as well as the effect on operational efficiency, affected morale on all squadrons. Night bombing raids were carried out mainly by Handley Page 0/100 twin engine aircraft, except for number 97 Squadron,

¹ W Raleigh and HA Jones, *The War in the Air – Six Volumes* (London, 1922-38), (hereafter *TWITA*), Volume VI p.143; C. G. Jefford, *RAF Squadrons* (London, 2001) pp.46-58, p.74; A Morris, *First of Many The story of the Independent Force RAF* (London, 1968) pp.177-178.

which flew HP 0/400. Both these aircraft types carried a crew of three. (all day bombers had a two-man crew)²

The table below set out the casualties suffered by the Independent force for the five months it operated.

Sqdn. Day	Joined IF	Sorties. Flown	Returned Early	KIA	WIA	PoW/ Missing	KIFA	Fly/sick
No 55	(6/6/18)	544	67	43	14	17	6	7
No 99	(6/6/18)	407	52	27	17	18	2	13
No 104	(6/6/18)	366	45	35	21	33	-	10
No 110	(16/9/18)	48	12	13	4	19	-	2
Night								
No 97	(20/8/18)	103	8	2	3	9	6	3
No 100	(6/6/18)	145	17	1	3	2	4	6
No 115	(16/9/18)	58	9	0	1	3	-	-
No 215	(19/8/18)	83	9	2	3	18	3	1
No 216	(6/6/18)	285	22	0	3	6	1	3
Totals =		2039	232	123	69	125	22	45 ³

Squadrons engaged on night bombing generally suffered fewer casualties than day bombing units, due in part to the fact that two squadrons did not join the campaign until August and one in September and therefore flew fewer sorties: and it was not until the last few months of the war that night bombers faced German fighters.

² P. Lewis, *The British Bomber Since 1914* (London, 1980) pp.50-60 p.89; *Jane's Fighting Aircraft Of World War I* (London, 1919) pp.73-74.

³ Figures taken from, Jones, *TWITA* Appendix XIII; Air27/521, 55 squadron record book 6/6/18-10/11/18; T. Henshaw, *The Sky Their Battlefield* (London, 2014), Appendix 3- Western Front losses 1914-1918; A. Morris, *The First Of Many* (London, 1968) Appendix B p.177; K Rennies, *Independent Force* (London, 2002) appendix E p.206.

Although the operational priorities of the RFC/RAF were reconnaissance and artillery spotting, from the beginning air bombing was employed tactically. These early attacks were carried out without any bomb storage or dropping equipment or bombsights and usually involved the pilot or observer carrying the bombs and throwing them out of the aircraft. Understandably, accuracy was not good and damage not great.

Between 1st March and 20th June 1915 there were 141 attempts to disrupt enemy troop movements by bombing railway stations, bridges, and transport and assembly areas. Using primitive bomb racks and without any form of bombsight, only three of these attacks were afterwards assessed as successful.⁴ However, by November 1916, 298 targets had been attacked with 17600 bombs and a basic bombsight had been developed, invented by Lts R B Bourdillon and Strange, which was adopted by the RFC and the RNAS. Additionally, the RFC had begun bombing at night with permission to attack targets up to six miles over the lines.⁵

The Zeppelin raids on London in April and May 1915, incited a strong public demand for reprisal raids on Germany. Indeed, in February 1916 it had been suggested in parliament (W Joyston-Hicks) that ‘a few bombers with the range to attack Essen, Cologne and the Rhine bridges would go a long way to winning the

⁴ Henshaw, *The Sky their*..... p 9 Jones. *TWITA* Vol II p 94-98

⁵ Jones, *TWITA* Vol II p 183 The RFC's first night flight was in April 1913. The permission to bomb at night was initially restricted to two aircraft in one night.

war'.⁶ This idea was supported by Churchill and others but brought protests from Haig and Trenchard who were concerned about RFC strength in France. Nevertheless, No.3 (Naval) Wing, which had previously operated in the Dardanelles campaign, was reformed. With French agreement the Wing would operate from airfields near Belfort and Nancy (principally Luxeuil).⁷ The Wing was set up in May 1916 but took some time to become operational and spent the months July-September training on the Sopwith ½- Strutters and evolving co-operative tactics with French Squadrons flying Breguet pusher aircraft (inferior and slower than the Sopwiths).⁸ The Wing existed from July 1916 until April 1917 and during that time carried out 18 raids into German and German held territory dropping about 2,500 lbs of bombs on each raid.⁹ Most of the targets were selected by the French in accordance with their 'bombing plan' and most raids were on the steel industry with attacks made on steel works in Obrandorf, Volklin and Dellinton.

Casualties were generally light but on the raid on Freiberg 14th April, the Wing lost three escort fighters (Four crew KIA and two made POW).¹⁰ These flights were tiring and difficult. Even if there was no enemy action from ground fire or fighters, most flights lasted three to four hours at heights of up to 15,000 feet

⁶ Wise, *Canadian Airmen*, p.262.

⁷ *AP125 The Royal Air Force in the Great War* (Air Ministry, 1936) p.380; R. D. Layman, *Naval Aviation in the First World War* (London, 1996) pp.74-75.

⁸ R. Bell Davies, *Sailor in The Air*, (London, 1967) pp.148-151.

⁹ G. K. Williams., *Biplanes And Bombsights*, (AUP Alabama, 1999) pp.2-5.

¹⁰ Jones, *TWITA* Vol VI p 121; Wise, *Canadian Airmen*, p.274 describes this raid as a reprisal for 'a series of German atrocities'.

without oxygen (normally needed at 10,000 feet). Flying often took place in marginal weather conditions and temperatures at altitude were often minus 30(F) and of course on most flights there was enemy action; usually from ground fire.¹¹ In fact, the Luxeuil Wing was never able to amass enough aircraft to be fully effective and Trenchard continued to insist that the RFC had priority. The wing was disbanded in April 1917.

Although enemy Zeppelin attacks tailed off by the end of 1916 enabling the Government to run down the air defences, it was but a few months before the surprise daylight German Gotha raids on London caused chaos and confusion, with not one interception by the RFC.¹² Strong public reaction resulted in immediate government action. As well as recalling some fighter squadrons from France to support Home Defence, Trenchard was brought back from France for consultation regarding offensive operations against Germany.¹³ Trenchard seems to have made no objection this time to the revival of strategic bombing raids from France, indeed he suggested that in addition to transferring Handley Page Bombers from Yorkshire (flying on anti-Submarine patrols), twenty DH 4 aircraft due to be delivered to Russia could be sent to the selected Bomber airfield in France.¹⁴

¹¹ Williams, *Biplanes and*, pp.7-8.

¹² Cole & Cheeseman, *The Air Defence of Great Britain* (London,1984) pp.207-208. Gotha raid of 25th May 1917; A Morris, *First of the Many* (London, 1968) p.17.

¹³ Jones, *TWITA* Vol V pp.90-91.

¹⁴ A. Boyle, *Trenchard* (London,1962) p.240.

These proposals were agreed and Trenchard was instructed to take immediate action against any German targets which could be reached from a bomber base in France.¹⁵ His response was to form a special unit, No 41st Wing Commanded by Lieutenant-Colonel C L N Newell consisting of No 55 (DH4s), No 100 (FE2bs) and 216 (Handley Page O/100s) Squadrons, operating from 11th October 1917 at Orchey.¹⁶ It is notable that Trenchard's response to a French request to co-operate with their campaign against the German steel industry, was to tell the French that the role of RFC bombers was:

long range attacks on German commercial towns as reprisals for enemy air raids on Allied towns. While the British pilots are learning the country they will be able to co-operate in attacks in the Sarrebruck, but not in the Briey-Longwy area which lies outside the line of approach to their main objectives.¹⁷

Indeed, at a conference at the French GHQ on 22nd December 1917 he made clear joint co-operation was not his main aim:

At this meeting General Trenchard told that he had been ordered by his Government to establish a force of bombardment aviation in the vicinity of Germany, that whether or not the Allies intended to join with him in this work did not affect whether or not he continued such work, and that he intended to increase the size of his force and to push this work to the maximum extent in compliance with the orders of his Government.¹⁸

Between October 1917 and June 1918, the wing (reconstituted as VIII Brigade on 1st February 1918)¹⁹ carried out 142 raids, 57 of which were against targets in Germany including Cologne, Stuttgart and Mainz.²⁰ Although the stated intention

¹⁵ Boyle, *Trenchard* pp.304-305.

¹⁶ Jones, *TWITA* Vol VI pp.122-123; Wise, *Canadian Airmen*, pp.286-287; Barker, *The Royal Air Force* p.384.

¹⁷ Jones, *TWITA* Vol VI p.125; Wise, *Canadian Airmen*, p. 288.

¹⁸ Williams, *Biplanes and Bombsights* pp.78-79; Boyle, *Trenchard* p.234-235.

¹⁹ Reinforced by the addition of Nos 99 and 104 Squadrons.

²⁰ *AP 125 The Royal Air Force*, p.382.

of at least one member of the Air Council (Sir Henry Norman) was the obliteration of German cities, it was clear that this was not possible, and certainly Trenchard felt that a more realistic aim was to do significant damage to some important German industries.²¹ The Wing's first raid was on 17th October against steel works at Saarbrücken-Burbach, when eleven DH4s inflicted some damage and killed five people. No enemy aircraft interfered with that raid but on the next raid by No. 55 squadron the bombers were attacked by a formation of Albatross fighters and had one aircraft shot down. The first night raid took place on 24th when nine HP 0/100s were to attack the Burbach works and sixteen FB2s (100 Squadron) the railyards at Falkenberg. The HPs did not find the target and two were lost to enemy action. No 100-squadron reported direct hits on the railyards, but also lost two aircraft.²² These raids were typical of the Brigades operation in its six months' existence. During this period some 719 individual aircraft sorties were mounted, 95 aircraft returned early (most because of engine failure) and 23 were lost due to enemy action.²³

Mention has already been made of the stress placed upon aircrew involved in long range bombing. Most 41 Wing (and later IF) raids were flown at levels above 10,000 feet, at which height oxygen is required for efficient bodily functions and above 20,000 feet is needed, to survive. (in fact, to enable good night vision,

²¹ Wise, *Canadian Airmen*, p.285.

²² Wise, *Canadian Airmen* p. 291; Jones, *TWITA* Vol VI pp.126-128.

²³ Jones, *TWITA* Appendix XIII. Targets bombed by Squadrons of 41st Wing; Williams, *Biplanes*, Appendix, 'Operational Summary of Raids by British Long-Range Units 1917-1918'.

oxygen is required from about 4,000 feet). Efforts were being made to provide an oxygen supply, but the equipment was inefficient and aircrew themselves were not fully aware of the dangers of lack of oxygen. The oxygen supply was regulated by a switch on the aircraft instrument panel and breathed through a tube into a face mask. The flow was erratic, and the amount of oxygen provided inadequate, especially as oxygen was not switched on until 16,000 feet. An additional problem was the uncomfortable mask and many aircrews preferred to take oxygen direct from the tube, which method provided an inconsistent supply.²⁴ For those crews flying on night raids, it does not seem to have been understood that oxygen deprivation results in degraded night vision. The effects of Anoxia continue to be felt after landing with aircrew commonly suffering headaches, sickness and fatigue for up to 24 hrs.²⁵ A significant additional factor at these heights is cold which especially affected the observers who spent much of the flight standing up in the cockpit and fully exposed to the slipstream. They often returned with frostbitten cheeks.²⁶

A further difficulty for aircrew, rarely if ever mentioned in accounts of World War air operations was that of the necessity to equalize pressure in the middle ear during ascents and more importantly, during rapid descents. The condition and

²⁴ TNA Air 27/521. 55 Squadron Record Book pp.59-60; A Morris, *The First of the Many: The Story of the Independent Force* (London, 1968) pp.20-121. Rexford-Welch *The Royal Air Force Medical Services Vol II Commands* pp 86-87 Night vision is impaired as low as 4,000 feet. Between 8-10,000 feet, tiredness muscle aches & pains, at 10,000-14,000 feet, respiration increases, fatigue and sleepiness. At 20,00 feet, sometimes lower, unconsciousness without warning. In RAF V-bombers and fast jets 100% oxygen was/is breathed under pressure from take-off.

²⁵ Morris, *The First*, p.122.

²⁶ TNA Air 27/521. 55 Squadron Record Book p.63; J W Huston, (Maj Gen) *The US Air Service in World War I USAF Office of Air Force History, Vol III* pp.371-373.

the effects of failure to take appropriate action is concisely described by Dr M D

Robinson:

As an aircraft ascends, the excess air pressure within the middle ear cavity normally vents itself without conscious attention, but the Eustachian tubes leading from the middle ear to the throat terminate in a flap valve which will prevent to entrance of air during the descent. Only by voluntary action: swallowing, yawning, by holding the nose and blowing—can the flap valve be opened to permit the entrance of air.

The greater the difference in pressure, the more difficult it becomes to vent the middle air during the descent. Increasingly severe pain, with inflammation of the ear drum, will be present by the time the flyer reaches the ground--- a condition later designated as aero-otis media, signifying an inflammation of the ear caused by flying.²⁷

This condition was exacerbated if aircrew flew with a cold: as many did, having no medical advice to the contrary and not wanting to appear to be avoiding duty.

Although affecting all aircrew the problem affected fighter pilots especially as the standard form of attack in the air was to get above the enemy and dive to the attack sometimes through several thousand feet, with little time to equalized ear pressure. The problems of descending too quickly were later recognised in the bomber squadrons and they generally tried to maintain gentle descent rates when returning from raids.²⁸

A further cause of stress was difficulty with navigation, the aero compass was in its early development stage and although the gravity turning error had been reduced by ‘damping’, the compass was still often inaccurate and when above cloud, as the aircraft often were, navigation was necessarily by compass heading and ‘dead reckoning’.²⁹ Apart from the difficulty with the aero compass, crews

²⁷ D H Robinson, *The Dangerous Sky: A History of Aviation Medicine* (London, 1973) pp.98-99.

²⁸ TNA Air 27/521. 55 Squadron record p.60.

²⁹ The Aero Compass was affected by gravity when the aircraft turned causing considerable in compass reading. (Northerly Turning Error)

suffered from a lack of suitable and up to date maps and of even basic navigational training which became apparent by the number of aircraft becoming lost if they had to operate above cloud.³⁰

On most raids there was also enemy action, both anti-aircraft fire and fighter attacks. It is not surprising that both individual and squadron morale was affected, and that some aircrew suffered from psychological and psychiatric conditions.

Even before No 55 Squadron became part of the Independent Force, an observer was removed from flying diagnosed as suffering from 'flying sickness. He was Flying Officer C D Palmer, who was removed from flying duties on 6th June with flying sickness and exhaustion and having spent a few days in Le Treport Hospital was sent back to England and the RFC London Hospital and did not return to the squadron.³¹

Morale had been poor on this squadron and had been adversely affected by several accidents. A squadron diarist noted one particularly disturbing crash when:

Poor Morse, who was barely nineteen years of age had been killed when while taking off. It turned out that the engine had conked when he got to about 100feet and while trying to turn back to the aerodrome he got into a massive nosedive and crashed into the trees close to our hut. He was killed almost at once and his observer Palmer.....was sent to hospital with internal injuries.³²

³⁰ C Goulter, 'War in the air: the bomber crew' J Bourne, P Liddle, I Whitehead Eds *The Great World War* Volume One (London,2000) pp 105-105

³¹ *RAF Casualty Card C D Palmer*. He also did not return to duty. On 29th May, Palmer's pilot (LT Wild) had been wounded by AA, he was unhurt; Henshaw, *The Sky Their*, p. 177.

³² O. L. Beater, 'The Diaries of Captain O L Beater DFC 55 Squadron' *Cross & Cockade* Vol 33 (1) & (2) 2002 pp.3-18 & pp.69-80, p.3. Beater, who had taken part in some 20 raids, was awarded the DFC in August 1918.

Beater noted that the crew involved had only been in France a month. The accident was on 14th November 1917 and the observer was the same Palmer noted above, and who had returned to the squadron shortly before the formation of the Independent Force.³³ Beater remarked that another pilot who had been involved in five crashes in a month was being sent home for a rest.

This squadron (55) was also affected by a change of commander who as soon as he arrived, changed many long-standing arrangements relating to eating and messing and (perhaps to keep crews occupied) set aircrews to cleaning aircraft when not flying. And, most resented of all, crews were roused every morning whether flying or not.³⁴ It is not clear how long this trough in morale lasted but by May, Beater's diary is more positive and cheerful. One reason was the successful operational record in early 1918. Another important boost to morale about this time was the issue of new properly designed flying clothing, the 'Sidcut Suit', a one piece, fur collared thick suit, which did away with the layers of silk, wool and leather which aircrew needed to protect themselves against cold.³⁵

The bombing campaigns by 41 Group (later VIIIth Brigade) did not achieve the results expected, nor satisfy French expectations of a combined bombing offensive. However, on 13th May 1918, the Supreme War Council gave the newly formed Air Council approval to undertake a long-distance bombing campaign. At about the same time and at least partly to provide an identity for

³³ *RAF Museum, Incident Card* C D Palmer, the accident was noted as 'stalled in turn'. Pilot killed.

³⁴ Beater, pp.17-18. Aircrew particularly disliked cleaning aircraft, and few COs would order this.

³⁵ Additionally, helmets and gloves were improved. Sidcot suits were still issued to aircrew cadets in the 1950s

the newly formed RAF it was decided to form an Independent Force (controlled by the Air Ministry and not BEF) for an extended and sustained offensive against German munition industries.³⁶ The commander would be Major-General Hugh Trenchard (recently resigned from a short spell as Chief of the Air Staff)³⁷ who took up his appointment on 6th June 1918. Its initial force would be those squadrons which had formed the VIIIth Brigade with the addition of three squadrons with Handley-Page Bombers (97, 215 and 115), 110 squadron with DH9s and 45 squadron with Sopwith camels. This last squadron was a fighter squadron which was considered necessary to protect the bombers from the increasing threat from German defensive fighters.³⁸ Thus the force was made up of three, day bombing squadrons (55, 104, 99) and five (110, 97, 100, 215 and 115) operating at night. The IF was intended to grow to 24 squadrons by October 1918, but in the event the squadrons noted above comprised the total force until the end of the war.³⁹ In fact the original plan was for the IF to consist of one

³⁶ R. Overy, *RAF: The Birth of the World's First Air Force* (London, 2018) pp.65-68. For the period October 1917-June 1918 the 41st Wing dropped just 129 tons of bombs. This with the loss of 13% of aircraft used.

³⁷ Trenchard had reluctantly accepted the new post of Chief of the Air Staff of the Royal Air Force, with Rear-Admiral Kerr as Deputy under the new Air Minister Lord Rothermere with Sir David Henderson as Vice president of the Air Council. This arrangement lasted only a few weeks. Trenchard could not work with Rothermere and resigned, Kerr disagreed with Trenchard and resigned, Major-General Frederick Sykes replaced Trenchard and Henderson resigned. Rothermere then resigned. Trenchard accepted the post of Commander Independent Force after the new Air Minister Sir William Weir had given him three options---or nothing. See Wise pp.284-285; Williams, pp.143-146; Jones, *TWITA* Vol VI pp.1-27. For Trenchard's view of all this see Boyle, *Trenchard* pp.284-288.

³⁸ *AP 125 The Royal Air Force*, p.383.

³⁹ Overy, *RAF* p.68.

hundred squadrons, but a shortage of suitable engines and lack of trained aircrew caused these estimates to be reduced.⁴⁰

Upon taking up his new Command, Trenchard had to decide how he would use his force to achieve his objective; ‘the breakdown of the German Army in Germany and the crippling of its source of supply’. He felt that he had two main alternatives:

- 1 A sustained and continuous attack on one large centre after another until each centre was destroyed, and the industrial population largely dispersed to other towns; or
- 2 To attack as many of the large industrial centres as it was possible to reach with the machines at my disposal.⁴¹

He decided, that due to his limited forces, only option two was possible but that in any event by attacking as many centres as could be reached the morale effect would be greater.⁴²

In fact, from the perspective of the aircrew, the Independent Force just continued the work of 41 Group and VIII brigade. Operations by the Independent Force began on 6th June 1918 with daylight raids on factories in Coblenz with a secondary target of railway sidings in Thoinville. 55 Squadron dispatched twelve aircraft and 99 squadron eleven but starting a pattern which was to hinder the DH9s for most of the IFs existence, no fewer than eight aircraft of 99 Squadron returned early with engine trouble. That same night the first night raids

⁴⁰ C Webster & N Frankland *The Strategic Offensive Against Germany 1939-1945* Vol I (HMSO.1961) p.39; Boyle, *Trenchard*, p.302; E Ash, *Sir Frederick Sykes and the Air Revolution 1912-1918* (London, 1999) pp.164-165.

⁴¹ Jones, *TWITA*, Volume VI p.136 quoting from Trenchard’s Dispatch of 1st January 1919 It is interesting to note that point 1 of this dispatch was Harris’s plan in the Second World War.

⁴² Jones, *TWITA* Volume VI p.137.

took place when seventeen aircraft of 100 and 216 Squadrons attacked Thoinville, with one aircraft returning early. Results were minimal, on the night raids four people were reported killed and some bombs fell on railway workshops.⁴³

Trenchard after taking command of the Force seems to have changed his view and from being a most vigorous opponent of strategic bombing he accepted Command of the IF with its objective of damaging German industries.⁴⁴ It's fair to add that he sometimes used his power to arrange targeting to meet Army battlefield needs instead of attacking German industry. The squadrons discussed in this chapter made some 31 attacks on airfields during the five months of the campaign and these attacks are omitted from the strategic targets attacked by the IF listed in the Appendix to the Official History.⁴⁵

In any event the Independent Force would never have enough aircraft to wage an effective campaign and several of the Squadrons making up the force were poorly equipped. 100 Squadron started with the campaign with the obsolescent FE2bs, which struggled to reach 9,000 feet in 30 minutes, had an endurance of three hours and could carry only three 112lb bombs. It was September before this squadron received the Handley Page 0/100s, which although not much faster than the FB2b, carried at least three times the bomb load and had an endurance of eight hours⁴⁶

⁴³ Jones, *TWITA* Appendix XIII p.52. Henshaw, *The Sky Their Battlefield* pp.179-180. In *TWITA* Vol VI Jones (contradicting the Appendix) states that the Ind Force started Operations on 8th June, but all four squadrons attacked on 6th. See L. A. Pattinson, *History of 99 Squadron* (London, 1920) p.12; Wise, *Canadian Airmen*, p.299; K. Rennles, *Independent Force* (London, 2002) pp.14-15.

⁴⁴ Wise, *Canadian Airmen*, p.285-286.

⁴⁵ 99 Squadron made thirteen airfield attacks, 104 Squadron eleven and 55 squadron seven. 99 Sqdn lost four aircraft in these attacks and 104 Sqdn ten. Rennles, *Independent Force*, pp.109-115. Pattinson, *The History of 99*, pp.51-53; Williams, *Biplanes and Bombsights Appendix Operational Summary of IF Raids*.

⁴⁶ *Janes Fighting Aircraft of World War I* (London, 1919,1990) pp. 72-73.

The recently formed 99 Squadron (based at Azelot) was equipped with the DH9, intended to be a longer-range replacement of the DH4. The actual performance of the DH9 and especially the new engine (BHP)⁴⁷ was inferior to the engine it was to replace and worse the 'new' engine was prone to failure. One other DH9 squadron served in the Independent Force, No.104 and as we shall see this unit suffered both bad luck and heavy casualties.

Following the opening raids, the Force continued attacks on industrial targets such as Coblenz and Mannheim (chemical works) but notably as noted above, many attacks were carried out on Railway stations and aerodromes, raids which in his previous role Trenchard would have considered directly helped the Army in the field.

At first casualties were light and the main operational difficulty was the large number of early returns, mostly for engine problems, but many sorties were also hindered by poor navigation, including one crew (104 Sqdn) inadvertently flying into Swiss airspace and being fired upon by Swiss AA defences crashed in Switzerland.⁴⁸

⁴⁷ Beardmore-Halford-Pullinger intended to replace the 275 hp Rolls-Royce of the DC4. Boyle, *Trenchard*, p.224 Trenchard suspected that the new engine would not meet this objective and in the event, he was proved right as the BHP was inferior to the RR and restricted the DH9 to a height of 15,000 feet. These engines also had defective carburettors which resulted in heavy fuel consumption above 10,000 feet - Wise, *Canadian Airmen* p.293; Morris, *The First of the Many* p.63; Williams, *Biplanes and Bombsights* p.190 notes that sometimes the radiator froze at high altitude with consequent engine failure.

⁴⁸ Jones, *TWITA*, Appendix X111 targets bombed by 41st wing and Independent Force Oct 1917-Nov 1918 pp 57-61 incident was on 26th June.

but the strain of operations was becoming apparent in the number of operations returning for medical reasons (considered below). Additionally, by the middle of July the German defences had been improved considerably and more German fighters had been allocated to air defence. The first serious indication of this change in the German approach was on 31st July when twelve DH9s of 99 Squadron set out to attack Mainz, three returned early with engine trouble, the remainder continued until they were near Saarbrücken, where they were attacked by some 40 German Albatross and Fokker fighters. The formation leader decided that as it was impossible to reach their original target, they would attack Saarbrücken. Before reaching this target, four DH9s were shot down and during the attack two more DH9s were lost, the two remaining aircraft were able to return to base.⁴⁹ Fourteen aircrew were lost, five killed and nine became PoWs. These losses of aircraft and crews meant that 99 Squadron was unable to muster enough pilots and observers for operations until reinforcements had been trained and was taken off operations for several weeks. Morale was badly affected; apart from the heavy casualties, the poor performance of the DH9, the aircraft was very difficult to fly and inexperienced pilots found it very hard to maintain formation, there were also many accidents especially when landing. The Squadron Commander noted the “feeling of despondence” felt by the squadron following these losses.⁵⁰ Baring notes Trenchard’s concern:

⁴⁹ Jones, *TWITA* Vol VI pp 141-142 Appendix XIII p 65. K Rennles, *War Diaries of the Independent Force* (London, 2002) pp.72-73.

⁵⁰ Pattinson, *99 Squadron* p.30.

This morning we had a gloomy piece of news. No 99 Squadron lost seven machines on a raid. The General sent for me and told me the news. He was very much upset. We went out to the squadron at once. The General spoke to the pilots and told them that where we had the advantage over the enemy was that our spirit was such that we could face and get over our losses and go on in spite of them, and that the enemy couldn't.⁵¹

Trenchard was clearly concerned about 99 Squadron's morale, and his visit to the squadron on 31st, was meant to address that concern. This visit and the decision of the Brigade Commander, Brigadier-General Newell and Wing Commander Baldwin, to stay on to have dinner with the squadron officers emphasised its seriousness.⁵² In fact Trenchard would often appear at aircrew briefings and wait to meet aircraft on their return. Baring wrote:

Of all the experiences we had in connection with aviation, there was none more trying, more harassing and harder to bear for those who were responsible, than waiting for these long-distance raids to return. It was not a question of losing one or two machines. One knew only too well that a change of weather might occur when the machines were at a great distance, and one might quite easily lose the whole formation.⁵³

During August some 20 new pilots and observers were posted to No. 99 squadron and additionally two American Pilots from the United States Aviation Service were attached to the squadron (by the end of the campaign a further six American aircrew had been attached). Most of the month was spent training the new aircrew all of whom were according to the Squadron Commander:

very ill trained in the work of a day bombing squadron, having been hurried through their training without adequate instruction in formation flying or map-reading.⁵⁴

⁵¹ M. Baring, *Flying Corps Headquarters 1914-1918* (London, 1920, 1985) p.287 - visit to 99 Squadron.

⁵² Pattinson, *History of 99 Squadron* pp.30-31 noted the squadron's appreciation of the visit.

⁵³ Quoted in Boyle, *Trenchard* pp.306-306.

⁵⁴ Pattinson, *History of 99 Squadron* p.32.

Although some pilots were sent back to England for further training, in order to resume operations, it was necessary to carry out intensive formation training.⁵⁵

The squadron resumed operations on 13th September, carrying out several raids in the one day with loss of two crews. Also, in September squadron morale was improved by the arrival of the first DH9a aircraft with the Liberty engine. Although the improved performance of this aircraft over the DH9 was marginal, 120 Mph against 114, 19,000 feet ceiling against 18,000 feet and five and half hour's endurance over four and a half, and the aircraft was easier to handle (very important for novice pilots), but the main gain and the new engines outstanding virtue was its much-improved reliability.⁵⁶

The squadron's return to operations was uneventful until the 26th September when a short notice raid on Thionville was ordered. This attack was disastrous, two aircraft returned early, and one got lost. The formation was attacked by 30/40 enemy aircraft and a DH9 was shot down. The remaining six aircraft attacked Metz and four more were lost.⁵⁷ The squadron lost eight aircrew KIA, two POW and two were wounded⁵⁸ Of the seven DH9s which crossed the lines, only one piloted by Lieutenant West, returned to Azelot, carrying the body of the observer,

⁵⁵ Pattinson, *History of 99 Squadron* p.35.

⁵⁶ Wise, *Canadian Airmen*, p.309. Jones, *TWITA*, Vol VI pp.51-53. The Liberty was an American engine in great demand and supplies to the Independent Force were made only at the rate of 175 in May, 225 in June and 620 in July. Due to the supply problem 99 Sqn had not received its full complement of DH9as by November. 110 Squadron was the only completely equipped DH9a squadron.

⁵⁷ Jones, *TWITA*, Appendix XIII, p.75. Henshaw, *The Sky Their Battlefield* p.226 notes seven 99 Squadron aircraft lost that day with seven aircrew KIA, Two POW, and one WIA rescued from aircraft which came down in Allied lines.

⁵⁸ Pattinson, *History 99 Squadron*, pp.55.

Lieutenant Howard who had been killed by a machine-gun bullet. The next day Lt West was transferred to Home Establishment '*for a change of duty*'.⁵⁹

Because of these losses the squadron was left with only two serviceable aircraft and again short of crews, causing the CO to start another program of training replacement aircrew. Poor results, inferior aircraft and casualties and therefore large numbers of replacements; were obvious reasons for the poor morale on this squadron, noted above, but despite this it seems that the Squadron Commander in this case was a positive influence and certainly led by example, he was awarded the MC and DFC whilst with the Squadron and later the DSO, and as soon as the order forbidding COs to fly on operations was rescinded, he began to lead the squadron on raids.

It was therefore particularly unfortunate for the squadron that it was at this difficult time that Pattinson was promoted away from the squadron to take over as Wing Commander of 41st Wing. He was succeeded by Captain P E Welchman. Unfortunately, on the 26th September raid Captain Welchman, leading, was shot down and captured. Thus, Captain W D Thorn became the third 99 Squadron Commander in a week.⁶⁰

Pattinson whilst CO was sympathetic to signs of battle stress in his aircrews and several officers were removed from flying and transferred to other duties or sent home, without medical intervention. Lt Levy an observer, and Lts Purser and

⁵⁹ Pattinson, *History 99 Squadron*, p.56; Henshaw, *The Sky Their*, p.226

⁶⁰ Williams, pp.198-199.

West, pilots, were all sent back to Home Establishment after less than six months in France. It seems that Purser did not complete any operations, but West completed at least 15 and Levy six.⁶¹ As on other squadrons on the IF, crews suffered from the effects of combat stress and there are indications of this early in the campaign. In June apart from the continual early returns because of engine trouble, there were several aircraft returning early because of crew sickness. On 8th Lt Garrity returned owing to 'faintness in the air' on 26th Lt Taylor, an observer, fainted in the air. In the first week of July another three observers, were responsible for early returns and then removed from operations. Lt Munson, who was remustered to Squadron Recording Officer, Lt Whattam returned to England and 2/Lt Southcott went first to hospital and then back to England. Two other aircrew, Lts Vick and Underwood were found to be unfit for further service flying. Additionally, there were regular instance of pilots being returned to England requiring further training, something which Trenchard had complained about two years earlier in 1916.⁶²

From the formation of the Independent Force until the Armistice, 99 Squadron was involved in some 43 bombing attacks.⁶³ In carrying out these attacks, 20 aircraft had been lost due to enemy action. Some twenty-one aircrew had been killed in action, nine had become prisoners of war and four were killed in flying accidents. There were also nineteen wounded, about half of whom did not return

⁶¹ Pattinson, pp.18-20; Rennles, *Crew lists*; See page 297 above

⁶² Pattinson, *History of 99*, pp.28 & 40.

⁶³ Jones, *TWITA*, Vol VI, Chap IV & Appendix XIII.

to the squadron. All these casualties needed replacements, but they were not the only aircrew losses to the squadron. During the same period another twenty-five aircrew were hospitalised for non-flying related illnesses or injuries, including influenza and appendicitis. Again, about half did not return to squadron duty. In fact, in less than six months of war 99 squadron suffered 114 aircrew casualties, amounting to 316 % of the unit's normal complement (42 pilots and observers).⁶⁴ These losses required replacements and 92 aircrew joined the squadron between June and November, and needed a continuous training effort as well as maintaining operations. These replacements often took at least four days to travel from England. They needed at least a fortnight practising formation flying and becoming familiar with the DH9. which they would not have trained on. The numbers already on the squadron, (establishment 21 pilots and 21 observers) would be reduced by leave, sickness and wounds so that the number of effective crews was probably 12/14.⁶⁵

On 99 Squadron, apart from those aircrew sent home on the Commanding Officer's authority, there were eleven cases of aircrew diagnosed with Flying Sickness. In the cases of 2/Lts K L Turnbull, P James, W C Francis and 2/Lt W J Baldwin they had served on the squadron for a matter of weeks. Turnbull was removed from flying on 26th August, sent to No 14 General Hospital and there diagnosed with Neurasthenia. James was sent to No 8 General Hospital

⁶⁴ *TNA Air 1/1972/204/273/1*, Casualty Statistics June-November 1918.

⁶⁵ Morris, *The First*, pp.81-82.

on 3rd October, diagnosed with Flying Sickness. Francis first reported sick with an inflamed nose on 4th August but was transferred to 14 General Hospital suffering from Flying Sickness and within a few days to the London Hospital. In Baldwin's case Pattinson notes curtly that on 21st September Baldwin was 'returned to Home Establishment' and it only on his casualty card that we see that in fact he was diagnosed as suffering from Flying Sickness.⁶⁶ None of these Officers returned to the squadron.⁶⁷ It is also the case that none of these officers had flown on operations with 99 Squadron and it is probable that the intensive training flying, involving many accidents, carried out by this squadron because of the inadequate training of replacement aircrew contributed to these failures.⁶⁸

Three of the officers removed from flying duties deserve special mention. The Squadron Commander (Pattinson) in one of his last notes in the Squadron history before he was promoted to take over 41st Wing said:

Capt Beecroft and Lieuts Walker and Taylor were admitted to hospital sick, and finally transferred to the Home Establishment. These officers had all been unwell for several weeks, but had continued their flying duties, and avoided the Medical Officer, till the younger pilots and observers had been trained to take their places. As three of the original members, who had played a great part in forming the Squadron tradition, their loss was a heavy one.⁶⁹

All three were diagnosed with Flying Sickness and all spent some time in hospital, but their good service was recognised.⁷⁰ Lieutenant W B Walker was awarded the DFC in September 1918, and Captain V Beecroft received the DFC

⁶⁶ Pattinson, *History of 99*, p.35; *RAFM CC W J Baldwin*.

⁶⁷ *RAFM CC K L Turnbull, P James, W C Francis*.

⁶⁸ Pattinson, *The History of*, p.33.

⁶⁹ Pattinson, *The History of*, p 53, dated 15/9/18.

⁷⁰ *RAFM CCs, Captain V Beecroft, Lieutenant W B Taylor & W B Walker*

in a post-war list in 1919. All three had impressive operational records, Beecroft had flown on 24 Bombing raids, Walker (an observer) 29 and Taylor, (also an observer, who on one occasion had fainted in the air) on eighteen raids.⁷¹

Number 104 Squadron also operated DH9s. This squadron with many (about 25%) Canadian aircrew, had arrived in France (Azélot) in May. As Wise comments “this squadron’s service was marked by bad luck and heavy casualties”⁷² The squadron’s ill luck began immediately. Two aircraft arriving late and in darkness at Azélot, crashed on landing. On 27 May another aircraft arriving from England, became lost did not arrive and was posted missing.⁷³ Although arriving in France on 21st May, the Squadron did not fly its first operation until 8th June, when ten aircraft attacked Mets-Sablon railways. Two aircraft returned early with engine problems, the first of many.⁷⁴ The next sortie on the 9th of June was even less successful, five aircraft returned with engine problems and one with a sick observer. Eight more raids were mounted in June, with some 21 aircraft returning early, one crashing on take-off and one crashing in Switzerland, (on 27th) but with only two losses due to enemy action.⁷⁵ This somewhat undistinguished start to the squadron’s bombing campaign was to become worse. In July in the course of eight raids, nine aircraft returned early, one crashed on take-off, two force landed in the allied lines and four were shot

⁷¹ Rennles, *The War Diaries of Bomber Squadrons of Independent Force*, Chapters 3-7. Pattinson refs in text.

⁷² Wise, *Canadian Airmen*, p.294.

⁷³ Wise, *Canadian Airmen*, p. 295

⁷⁴ Jones, *TWITA* Appendix XIII p.55.

⁷⁵ Jones, *TWITA* Appendix XIII pp.54-58; Henshaw, *The Sky Their Battlefield* p.184 & p.186.

down with the loss of eight aircrew.⁷⁶ August was disastrous, twelve aircraft and twenty-four aircrew were lost to enemy action. The worst day was on 22nd August. On that day thirteen DH9s set out to bomb chemical works at Mannheim. One aircraft was shot down by AA fire when crossing the German lines, the rest continued to the target area where the formations were attacked by 15-20 Fokkers. Although the squadron were able to drop 16 bombs and some damage was done, the squadron formation was broken up and the German fighters attacked from all directions. Six more DH9s and crews were lost which, added to the earlier losses, caused the squadron to be destroyed as a fighting unit.⁷⁷

These heavy losses were 104 Squadron's worst in the war and crew losses and the consequent replacement training meant the squadron flew no further operations until the 7th September and on that day three more crews were lost.⁷⁸ During the remainder of the IF's campaign, 104 Squadron flew a further fourteen operations and although early returns were much reduced (104 squadron also received the Liberty engined DH9s) five more aircraft and crews were lost to enemy action, three to forced landings and three to crashes.⁷⁹ During the campaign, the squadron lost 28 aircraft to enemy action, nine to crash landings on the Allied side of the lines and two to accidents on the Airfield. Aircrew lost totalled 57, of whom 34 became POW, 23 were KIA., that is 118% of

⁷⁶ Henshaw, *The Sky*, p.186 & p.189.

⁷⁷ Wise, *Canadian Airmen*, pp.304-306.

⁷⁸ Henshaw, *The Sky their*, pp.217; Jones, *TWITA* Appendix XIII pp.64-69; Rennles, *Independent Force*, pp.94-96.

⁷⁹ Jones, *TWITA* Appendix XIII pp.71-83; Rennles, *Independent Force*, Chap 5-7.

squadron strength (40 aircrew, not including CO and ancillary officers). Another 20 were wounded, mostly with minor wounds.⁸⁰

As with other Squadrons some of 104 Squadron aircrew were so affected by stress that they had to be removed from flying. Between June and October nine aircrew were diagnosed as suffering from flying stress. The earliest to suffer was 2/Lt J E Belford, a Canadian Observer.⁸¹ On 17th June he was hospitalised at Le Treport General Hospital, on 7th July he was transferred to the Canadian hospital and diagnosed with Flying Sickness. He was still being treated in November when his casualty card noted ‘now better but ordered to remain in hospital pending transfer.’⁸² Belford had taken part in only two operations, on the eighth and ninth of June, on both his aircraft returned early with engine trouble without reaching the target.⁸³ It is notable that of the nine officers removed from operations from this squadron, only two had flown on more than one operation. Lt R G Gibbs an Observer, who was admitted to hospital on 26th September and was immediately transferred to the RAF London Hospital with Flying Sickness, had been on four raids, two in July one in August and one in September. On his last operation his aircraft had been attacked by six German fighters, forcing his pilot to make a forced landing in the allied lines. This was the operation which cost 104 Squadron seven crews.⁸⁴ Two of the 104 Squadron pilots removed

⁸⁰ Figures for aircrew losses extracted from Henshaw, *The Sky Their*, part 1, The Western Front.

⁸¹ At this time about 30% of 104 Squadron’s aircrew were Canadians

⁸² *RAFM CC* 2/Lt J E Belford

⁸³ Rennles, *Independent Force*, p.17.

⁸⁴ Rennles, p.121; *RAFM CC* Lt R G Gibbs

from flying were Americans. Lt C L Startup was admitted to No 8 General Hospital on 3rd August, with symptoms of flying stress. On 13th August he was sent back to England and the RAF Hospital Eaton Square. He did not return to operations and was transferred to 30th Training Squadron.⁸⁵ Startup flew on three operations, all in June, from the last of which he had returned early with engine trouble.⁸⁶ Lt A E Turffrey, also American was admitted to 14 General Hospital at Etaples on 1st September and at once diagnosed with Flying Sickness. He had not flown on any operations. He remained in hospital until 18th when he was discharged but did not return to the squadron.⁸⁷

Of the remaining four aircrew removed from flying, Lt E C Edmund was admitted to hospital on 12th September with Flying Sickness but discharged to duty on 30th September. Lt J J Phillips, admitted 11 September, discharged to duty on 14th, Lt J W Power, admitted 26 August with Flying Sickness and did not return to squadron and Lt J W Pope was admitted to the Canadian hospital with ‘muscular spasms’ later diagnosed as Flying Sickness. Lastly, 2/Lt A C D Anderson who was admitted on 1st October with Flying Sickness, was given three weeks leave⁸⁸. In fact, none of these officers flew with squadron again. The cases of these nine officers demonstrate the wide variation of the impact of Flying Sickness on aircrew, and on treatment. Some of these seem to have been considered

⁸⁵ *RAFM CC* Lt C L Startup.

⁸⁶ Rennles, *Independent Force*, crew lists.

⁸⁷ *RAFM CC* Lt A E Turffrey

⁸⁸ *RAFM CCs* 2/Lt A C D Anderson, Lt E C Edmund, Lt J J Phillips, Lt J W Pope, Lt J W Power.

(medically) to have been fit to return to operations but do not appear on the squadron crews list after their time in hospital. Possibly, by the later months of the IF campaign enough replacements were arriving in time for training before being committed to action and it was not necessary to involve those returning from hospital.

As noted above Number 55 Squadron was one of the original 41st Wing squadrons and had by the time of the IFs formation considerable experience of strategic bombing operations. During its time with the IF, 55 Squadron carried out 47 strategic bombing raids (not including those against airfields noted above). During these attacks the squadron lost 12 aircraft and crews to enemy action, another seven made forced landings in Allied territory, 95% of aircraft strength (20 aircraft). Those losses were less than the other day bombing squadrons. The numbers of aircraft returning early with engine trouble were also fewer, probably due to use of the more reliable DH4. On the other hand, three returned early with sick aircrew.⁸⁹ Morale on 55 squadron as noted above, was affected by leadership changes even before joining the IF, but it probably improved with its next change of Commanding Officer (Major Gray). Additionally, its aircrew's greater experience of bombing operations certainly helped to ensure that its losses, although considerable, were less than the other day bombing squadrons. Also, it operated DH4s, which had by 1918 established a good

⁸⁹ Lt B S Taylor an observer who came back sick was given a rest from flying duties. On the next raid, his regular pilot with another observer, was shot down and killed. Morris *The First of The Many*, p.80.

reputation for serviceability. These factors were certainly the reasons that 55 was the only day bombing squadron not to be withdrawn from operations during the IF campaign. Nevertheless, four more officers were removed from flying with Flying Sickness between July and October. One of them, 2/Lt A M Bryant, was admitted into No 8 General Hospital on 21st July suffering from Flying Sickness but was discharged to duty seven days later. He did not return to the squadron, perhaps not surprisingly as he had flown on one operation and had returned early for unspecified reasons.⁹⁰ 2/Lt W R Pepper had seen some of the war before he joined the RFC, having seen service with the East Surrey Regiment. On 14th October, he was admitted to No 14 General Hospital suffering from Flying Sickness and within a few days was transferred to the RAF London Hospital and later to the Grove Military Hospital and was still being treated there in 1920.⁹¹ He does not appear on any 55 Squadron crew list during its IF service and would seem to have been diagnosed during his operational training period. 2/Lt H C Allen was taken off flying in late June. As 55 Squadron crews list are not complete for that month we cannot know whether he completed any operational service with the squadron. He was transferred to the RAF Eaton Square Hospital and was still there at the end of the war.⁹² The case of Lt G N Treeside, an observer, was different. He had flown on at least five operations and on the 11th August following an attack by German fighters, the aircraft fuel tank was holed

⁹⁰ Rennles, p.62; *RAFM CC A M Bryant*.

⁹¹ *RAFM CC W R Pepper*.

⁹² *RAFM CC H C Allen*.

and his pilot (Captain Bell) was soaked with petrol. Consequently, neither Tressider or the pilot dared fire their guns and were lucky to evade the German fighters.⁹³ Tressider flew several operations, but on 26th August he was admitted to No 14 Gen Hospital at Etaples and shortly afterwards transferred to London and the Prince of Wales Hospital. He did not return to operations.⁹⁴

The performance of the Independent Force was disappointing, and the results almost certainly did not justify the casualties incurred. Unreliable aircraft, inexperienced aircrew and bad weather, together with effective enemy defensive measures combined to frustrate this first attempt at strategic bombing. A total of 537 tons of bombs were dropped (160-day, 377-night) more than half of that tonnage was dropped on railways or airfield targets in support of ground forces. The tonnage dropped of targets more than 85 miles from front line (strategic) was 47, mostly on Mannheim and Koblenz.⁹⁵

For the day bombing squadrons the loss rate was certainly enough to affect morale. Total aircrew casualties for these squadrons for the five months they operated was 298 or 206%.⁹⁶ Each squadron's aircraft establishment was eighteen, thus 36 aircrew, for the daylight force a total of 144 aircrew. This wastage rate meant that a large reserve force to ensure that casualties are replaced at once, which in turn resulted a in large numbers of inexperienced pilots arriving

⁹³ Rennles, p.85.

⁹⁴ *RAFM CC G N Tressider*

⁹⁵ Overy, *RAF* pp.74-75.

⁹⁶ Casualty includes KIA, PoW, WIA, KIFA (at front) and FS.

at the front, not only caused a reduction in squadrons fighting efficiency, but also increased the number of accidents.⁹⁷

The day bombing squadrons flew operations for a total of 21 squadron- months during the existence of the IF.⁹⁸ Aircrew lost to enemy action and accident amounted to 345 in the same period, enough to man ten squadrons. This was a higher wastage rate than the RAF squadrons fighting over the front.

This chapter completes the examination of air operations on the Western Front, from 1915-1918. A major objective of this thesis is to establish the incidence of aircrew removed from operational flying due to psychological disorder (flying sickness) and the causal factors influencing aircrew breakdown. This work establishes that the most significant factor is the morale of a squadron, and the most important positive factor is the quality of leadership by squadron commanders. On the other hand, the factor most adversely affecting morale was the heavy casualty rates. Throughout the campaign on the western front numbers of aircrew affected by combat stress increased each year from 1915 to 1918. The analysis indicates that the breakdown rates for RFC/RAF generally and the Independent Force differ, with the incidence somewhat greater in the Independence Force. There is no clear reason for this, although the Independent

⁹⁷ H R Brooke-Popham, 'The Air Force' *Journal of the Royal United Services Institute*, February 1920, p.49. Brook-Popham was Trenchard's staff officer throughout his time as C in C and confirmed in this talk that Trenchard had maintained his policy of 'all out offence' during his time in command of RFC.

⁹⁸ Jones, *TWITA* Appendices Appendix XII p.41.

Force may have received a larger proportion of inadequately trained aircrew due to the general shortage for the last five months of war.

Conclusion

The application of psychiatry to war is highly topical, a source of media and public interest and a legitimate subject for academic study. Psychiatry in the period covered by this study was at an embryonic stage and some authorities consider that *military* psychiatry can be regarded as having begun in First World war¹. Clearly the necessity to treat thousands of troops suffering from unexplained somatic disorders, including disordered action of the heart (DAH), palpitations and neurasthenia, where the symptoms shown suggested a psychological cause, meant that military psychiatry necessarily evolved to address the difficult questions of diagnosis and treatment.

This thesis determines the extent of psychological disorders suffered by flying personnel during the First World War. Additionally, it examines the effects of training and morale upon the incidence of such disorders. Using medical sources recording the results of flying and combat stress in Royal Flying Corps and Royal Air Force aircrew, it has established the incidence of aircrew failure for psychological disorders and shown that such failures were a significant cause of wastage during the air war over France in 1914-1918.

¹ E Jones & S Wessely, *Shell Shock to PTSD* (London, 2005), p. 1.

The results of this work have been compared with outcomes of psychological disorders in RAF aircrew of the Second World War. This comparison has shown an equivalence in the incidence of these disorders in both wars.

The maintenance of high morale in a unit has been shown to be a major factor in reducing psychological breakdown. Moreover, the importance of good leadership, especially by squadron commanders, in promoting high morale has been confirmed

As noted in chapter five of this thesis, the foundation of the military psychiatrist's dilemma is the combatant's conflict between carrying out his duty and risking his life. Fear is the catalyst for the somatic symptoms, the anxiety state and eventually psychological breakdown of combatants including RFC/RAF aircrew.² The deterioration of pilots and observers as a result of the great stress of aerial warfare in 1917 and 1918 was described vividly by Major J L Birley (medical advisor to C in C France):

Fatigue, uncertainty, fear and physical distress caused a decrease in his efficiency and his offensive spirit. The appearance of this deterioration depended on the quality of the man and the degree of stress with which he had to contend. He traced the syndrome from its beginnings in a loss of zest for flying to a fully developed anxiety state..... although the men called it 'wind up' the condition is in fact an anxiety neurosis.³

² P Wood, 'Da Costa's Syndrome' *British Medical Journal* 2 (1941), pp. 845-851. Summary at p. 850; C S Myers, *Shell Shock in France 1914-1918* (London, 1940) pp. 25-26.

³ J L Birley, Goulstonian Lecture 1920 'The Principle of Medical Service as applied to Military Aviation' *Lancet* 1920 I 1147, 1121

It was noted early in the First World War that soldiers of the BEF were arriving at medical centres traumatized and presenting medical officers with symptoms which they had difficulty understanding and treating. As we have seen, their condition was inappropriately described as 'shell shock'. These soldiers presented an almost endless variety of symptoms. including tremors, headaches, nightmares, memory loss, speech loss, poor concentration and paresis. In all cases no physical injury was suffered. Similar symptoms were found in pilots and observers of the RFC/RAF after combat experience.

This thesis is concerned with the responses of those pilots and observers to the stresses of flying and combat. The reaction to this stress can produce psychological symptoms which indicate a nervous or psychiatric disorder, and which when diagnosed require that the patient be removed from flying duties. Any such diagnosis was recorded on the Officer's casualty card. These cards the prime medical source for this study and the base for all statistical medical information, were raised for all RFC/RAF casualties in the First World War, including, killed in action, wounded in action, killed in flying accident, wounded in flying accident and missing/pow. For this study 27,000 RFC/RAF personal and incident cards were individually accessed. Personal cards show, the officers personal details usually including, squadron number, initial date of admission to reporting hospital, diagnosis, treatment and disposal, to the RFC/RAF wing in the military hospital at Etaples, or more often to one of the UK hospitals dealing with

psychiatric cases in the UK. Incident cards include similar information, but with a short note of the incident reported.

These cards were completed by doctors or medical staff who were often very busy. They are in manuscript (a few are typed) and sometimes difficult to read. One further difficulty is the confusion caused by the failure to agree a common diagnosis for RFC/RAF aircrew suffering from combat induced nervous disorder until 1917, when 'flying sickness' was agreed.

Notwithstanding these difficulties, it is submitted that the total number of aircrew noted in this thesis as suffering from nervous disorders is accurate to within 5%. What is perhaps not so accurate is the attribution of officers to squadrons, as the squadron or unit number is missing on about 10% of the casualty cards with Flying sickness diagnosis. (about 65 officers)

Psychological Disorder in RFC/RAF

A few months after the start of the First World War it was apparent that pilots and observers of the newly formed air service were subject to similar psychological somatic symptoms as soldiers at the front. As with BEF doctors, there was some confusion and hesitation in diagnosing the nervous state of these psychological disorders. The first four officers noted in the RAF Museum Casualty Cards (diagnosed between 5th May-19th June 1915) are shown as suffering from

Neurasthenia, the fifth (13th November) as Shell Shock.⁴ In 1916, three diagnoses to aircrew of shell shock were made, one to a Kite Balloon observer.⁵, and two to officers who had previously served at the front. Most of the other conditions in that year were shown as Neurasthenia, but two were for DAH. By January 1917 there is considerable variation in diagnoses, there were five shell shocks (all officers who had *not* seen previous service), twelve cases of DAH, fourteen of Neurasthenia and ten noted as 'debility'. The BEF description of 'Not Yet Diagnosed-Nervous' was introduced in November 1916 by BEF in forward centres (to avoid terms such as shell-shock, or war neurosis) and was also used by the RFC as an initial classification, with four aircrew being shown as NYDN. However, in December 1917, the RFC medical authorities finally found a diagnosis which effectively covered both the psychiatric and psychological symptoms of aircrew psychological breakdown. This was 'flying sickness' the first diagnosis of which was for Lt R S Lewis of 100 squadron. From this time the normal diagnoses of aircrew suffering from psychological disorder, was flying sickness. However, the other conditions noted above were on occasion still used and, neurasthenia, perhaps to indicate a mild form of flying sickness, was seen up to the end of the war.

⁴ Lt S F A Welsh, diagnosed with Shell Shock on 13th June 1915, was under pilot training at that time, but had previously served with the Sussex Regiment. It is possible that he was diagnosed early in his training suffering from his previous service.

⁵ As we have seen, kite Balloon observers were in practice in virtually the same position as those in the trenches.

By early 1917, wastage from this cause was significant and recognition of its importance prompted an investigation. However, Lt Col M Flack, Director of Medical Research having devised tests to evaluate efficiency and Flying Strain, reported that although psychological factors could be present the real cause of these symptoms was physical strain. A report by Major J L Birley, medical adviser to C in C France, however, did conclude that 'temperamental unfitness' was a factor in the loss of confidence shown by some aircrew, without suffering a crash or other unpleasant experience. He felt that temperamental and physical fitness were closely allied and that in the temperamentally unfit failure was largely due to mental shock.

Notwithstanding this concern about the psychological suitability of those flying and fighting with the RFC, there is no indication that any of this concern was passed to the officers involved in recruiting aircrew. As noted in chapter two, recruiting officers faced with the continually increasing demand for pilots, turned firstly to the many volunteers from army officers. Subject to the possession of the Aviators Certificate', (which would cost £75.00, refunded by the Army when accepted for RFC) the average army officer could easily meet the requirements of service and experience. It seems that it was also assumed, if it was ever considered, that any serving officer was psychologically suitable.

It soon became clear that with the great expansion of the RFC (and from early 1915, increasing numbers of casualties) that service sources would not be able to

supply enough aircrew. This realization that large numbers of aircrew would be needed, opened the way for volunteers. Although there were always enough volunteers, both for the RFC and RNAS, the actual selection was arbitrary, unstructured and always with great emphasis placed on the interview with the candidate. No evidence has been found which indicates that any consideration was given to the psychological fitness of candidates at the recruiting stage. Of course, aviation was a new activity and there was little knowledge of the physical or the psychological effects of flying, or the reactions of pilots and observers in this new environment. At that time, most flyers would have come from the army or the Royal Navy, so selecting recruits from applicants with the same background would have seemed reasonable. By 1916 another important source of pilots, (with basic training completed), was the output from the Canadian flying schools. Selection in Canada was on a similar basis to that of the RFC in England, with the extra requirement 'have the marks of a gentleman'. By January 1918, recruits from Canadian Flying Schools were arriving in Britain at a rate of 230 a month. As with RFC aircrew no consideration had been given when recruiting to the candidate's psychological fitness for flying.

It was not until 1917 that any attention was given to the psychological attributes required for selection for aircrew service. By December 1916, some 30 aircrew had been removed from flying on operational squadrons for psychological disorder (flying sickness). In that year, the Air Council appointed an Air Medical

Investigation Committee, to prepare reports on the medical problems of flying. One report by Major Birley concluded that flying did require a 'flying temperament', but he was unable to define the exact requirements.⁶ A more useful attempt was made by Professor W H R Rivers, (Captain RAMC, Consultant to RFC) and Squadron Leader T S Rippon, who considered whether it would be possible to establish a mental aptitude for flying by interview. They interviewed some 37 students who were already under instruction with the aim of assessing the subject's likely success as airmen. The results were inconclusive and two of their best students were killed in accidents.⁷ These tentative and unsuccessful attempts to investigate and 'screen' candidates for vulnerability although crude and unstructured, were precursors of later attempts which also failed.⁸

Screening for psychological vulnerability to breakdown in the air is always likely to be unsuccessful. On the one hand the screening procedure cannot consider those matters which greatly influence battle performance of the individual such as, leadership, training, unit coherence unit success: all of which influences the individual's response to action. On the other hand, it is also impossible to predict the intensity of operations and crucially, whether any individual will experience

⁶ J L Birkey, 'Temperament and Service Flying' *Medical Research Council: Medical Problems of Flying* (HMSO, 1920) paper No 8 (1917) pp.142-144.

⁷ W R H Rivers & T S Rippon, 'Mental Aptitude for Aviation' *Medical Research Council: The Medical problems of Flying, Report No 12 (1917)*.

⁸ D J Williams, 'Predisposition to Psychological Disorder in Normal Flying Personnel' *Air Publication 3139: Psychological disorders in flying personnel of the Royal Air Force* (HMSO, 1947), pp. 185-192.

an exceptionally high level of stress. In fact, it has been found in several studies that those who do breakdown, even if it is later found that there was some nervous pre-disposition, have in many cases, served as long and as well as the average combatant.⁹

This thesis confirms the impracticability of any attempt to screen potential aircrew by the elimination of candidates with a predisposition to neurotic breakdown.

Training and Psychological Disorder

This thesis has established that although effective training has a positive effect on confidence and morale, a significant number of aircrew failures in training are for psychological reasons. The actual percentage of aircrew under training who fail for psychological reasons cannot be accurately measured, although Anderson's 10% is likely to be an underestimate. It is probable that the figure quoted in an American report quoted in AP 3139 showing that 36% of pilots reclassified by advanced flying schools was for 'fear or other personality, temperament or interest characteristics without mention of other deficiencies' is accurate.¹⁰

⁹ E Miller, *The Neurosis In War* (New York, 1943), pp. 13-15; N S Gilchrist, 'An Analysis of causes of Breakdown in Flying' *British Medical Journal* Volume 2 No 3015 (Oct 1918) pp 401-403; and Jones & Wessely, pp. 108-110.

¹⁰ C P Symonds (AVM Sir) & D J Williams (Wg Cdr). 'Signs of Temperamental Unsuitability in Aircrew Under Training' *AP 3139* Chapter XV, pp. 193-198, quoting 'Analysis of the duties of aircrew personnel'. Bulletin No 14 Air Surgeon's Office HQ American Air Forces December 1942

An important contributing factor to psychological problems with aircrew in the First World War was that flying was a novel occupation. Today, most of the population knows something about aviation and aeroplanes, many have flown albeit as a passenger. In 1914, few people had seen an aircraft, fewer had flown and very few were qualified to fly. The potential pilot was not aware that there would be many accidents, he did not know how fragile aircraft were, how turbulent the air could be or even how high is high? Accounts of trainee pilots of the RFC highlight the apprehension, not to say fear of the student (and the incompetence of the instructor).¹¹ The experiences of trainee pilots, Binley, Lee and Yeats (Chapter Three) in the first two years of the war, and the effects of the many training accidents certainly may help to explain why many pilots failed for psychological reasons.

Thus in 1916 it is not surprising, as Anderson found, that many students struggled with the mental aspect of mastering this entirely new environment psychological unnerving, and either asked to leave the course or developed what Anderson called ‘aero-neurosis’. He notes that during his time as an instructor with the RNAS, 600 students passed through his hands.¹² He says that about 10% of students ‘had to give up’ suffering from some type of neurosis. Some were affected

¹¹ See p.106 and Lee, *Open Cockpit* p. 23.

¹² Anderson, pp. 1-3; pp 52-55. Anderson originally joined the Royal Navy at the outbreak of the war as a medical consultant. Later he learned to fly and was attached to the RNAS, where he became a flying instructor.

during the dual control instruction, but it was most common after a few solo flights and a few students were removed or asked to leave when they moved on to faster types of aircraft. He attributes most of these failures to an ‘aero-neurosis, and notes that being in accident, sometimes minor, can affect confidence and induce anxiety. He describes the response by one student who, having made a very erratic first solo flight followed by a bad landing, stepped out of the aircraft and announced, ‘*nothing on earth would induce him ever to go up again*’.¹³

The Casualty Cards at the RAF Museum show some 20-aircrew removed from flying training units during the War for psychological reasons, but this is certainly an underestimate, probably by a large margin. Many students were failed at an early stage for unspecified reasons, many were injured in accidents and did not return to flying and it is not known how many asked to be taken off flying duties. Anderson says that 10% failed suffering with aero-neurosis and it likely that his estimate is accurate for the early years. However, with the introduction of the Smith-Barry system of instruction in 1917, instructors were encouraged to take account of the student’s mental state in training with the aim of eliminating the ‘nervous’ pilot. This was achieved in part by giving each applicant a test flight with an instructor. This was undoubtably a crude method but was claimed to

¹³ H G Anderson, *The Medical and Surgical Aspects of Aviation* (London,1919) p. 53. Anderson also describes many of the symptoms of ‘Aero-Neurosis’ including headaches, insomnia, nightmares, irritability, tremors, and paralysis.

eliminate some 45% of applicants as unsatisfactory.¹⁴ Thus the numbers of candidates entering flying training who were not 'temperamentally suitable' was considerably reduced.

Although it might seem to be a 'hit or miss' assessment of the student's chance of succeeding in flying training, a similar system was used in the Second World War to assess potential pilots as it was felt that flying instructors were in the best position to make early assessments of candidates. The rationale for such assessments is set out in AP 3139, in 'Notes to Flying Instructors' in June 1943:

Before men are accepted for training they are interviewed by general officers and medical officers who reject any who seem unsuitable for flying duties. It is impossible however, to eliminate all who are unsuitable by means of an interview. There are some signs of unsuitability which only appear during training.¹⁵

A common method used to identify inadequate students, was stalling the aircraft and noting the student's reaction: does he 'stop talking, cling to the aircraft and stop looking out' or just wait calmly for the instructor to recover the aircraft?

When considering the incidence of breakdown in training, this thesis includes only aircrew breaking down whilst training which is noted in the RFC/RAF casualty cards. The Official History quotes a failure (wastage) rate of 28% during pilot training, without any indication of the reasons for failure.¹⁶ For Canadian flying schools during the First World War the failure rate was worse, 9200 cadets were

¹⁴ H A Jones, *Official History The War In The Air* (London, 1922-1937) Volume V pp. 431-433; D Winter, *The First Of The Few*, (London, 1982), p. 30.

¹⁵ AP 3139 *Psychological Disorders In Flying Personnel of the Royal Air Force 1939-1945* (HMSO, 1957) Chapter XV Appendix Notes for Flying Instructors on recognition of nervousness.

¹⁶ Jones, *TWITA* Volume V pp. 425-426.

accepted and 3135 completed pilot training, a wastage rate of 65% which includes all reasons for failure, and again, it is not possible to establish the number of failures for medical reasons. It is right to add that the Canadian schools improved markedly after the introduction of the Smooth-Barry instructional system. The major improvement was the reduction in fatalities in Canada.¹⁷

However, although there is undoubtedly a significant failure rate in aircrew training, for those who succeed, effective training is an invaluable morale enhancing factor. Chapter five of this thesis considers the effect of training on morale: it creates unit cohesion, itself a positive factor, it enables trainees to master technologies and builds self-confidence. It establishes that, although the only real training for war is war, realistic training engenders a positive attitude and high morale in a unit (squadron) which undoubtably reduces the rate of psychological breakdown.

Morale and Leadership

This study has confirmed that good leadership is the most important factor in maintaining morale and sustaining vulnerable combatants against psychological failure in the RFC/RAF in the First World War. Evidence confirming this, perhaps bold assertion, includes statements by aircrew, commanders, and

¹⁷ Wise, *Canadian Airmen and The First World War: The Official History of the Canadian Air Force Volume One* (University of Toronto, 1980), p. 117-118.

psychiatrists. In chapter six, Lt Alan Jackson's account of the effect of a change of squadron commander is illustrative of the importance of sound leadership. He describes the bad effect on morale of a squadron led by an inefficient and careless commander.¹⁸ Wells in his study of World War Two aircrew of the RAF and USAAF, quotes an RAF Bomber Command medical officer, making this point:

Send a good leader to a squadron of low morale and in a short time he will build it up, put a bad leader into a squadron and, given time the standard will deteriorate.¹⁹

Although all leaders are different there are several basic qualities required to lead aircrew which apply to all. The first is courage: a squadron commander does have to lead; he must fly on operations. In the First World War, initially squadron commanders were forbidden to fly over German lines, the rationale being that the loss of experienced leaders could not be borne. In fact, many squadron commanders ignored this order and no action was taken by Trenchard. As pointed out earlier in this work, commanding officers were in a difficult position: if they did not fly on operations but had to order others go, sometimes in bad weather, or against strong opposition, their reputation and authority suffered (unless like Major Lanoe Hawker it had already been established; he won a VC before being appointed). In the event the order was rescinded in 1917.

¹⁸ See p 217 this thesis, Lt Alan Jackson No 5 Squadron

¹⁹ See p 209 and M K Wells, *Courage and Air warfare* (London, 1995), p. 137.

Secondly is competence. Aircrew expected their leaders to be brave; they also expected competence. The ability to fly well and fight well and to administer the squadron without fuss, earned respect. A good squadron commander also went some way to ensuring the other major marker for good morale, successes in battle. Sound leadership almost certainly ensures good morale, but even under the best conditions some aircrew may suffer psychological breakdown. The squadron commander has a further role in reducing the incidence of breakdown, that is by ensuring that crews are rested, get their leave on time or are, if necessary, removed from flying duties. This study has noted several examples of such removals. Including that of Lt F L Rankin of No 18 Squadron who was sent home after an extremely stressful operation, during which his observer was killed, even though Rankin had saved him from falling out of the aircraft. Rankin did not return to duty.²⁰ Harold Balfour, afterwards a prominent politician says in his memoirs he was sent home with a very minor injury by his commanding officer in April 1917, so that he could be rested. He admits that he was showing signs of strain. He returned to France in November to shoot down nine aircraft and win the MC, but in April 1918 was returned to England again as a possible case of DAH.²¹

²⁰ T Henshaw, *The Sky Their Battlefield* (London, 2014) p. 58; Peter Hart, *Somme Success* (London, 2012), p. 202.

²¹ H H Balfour, *An Airman Marches* (London, 1954), pp. 45-46. In the Second World War Balfour, as Air Minister, had to adjudicate on cases of LMF and remembered his own service experiences. H H Balfour *Wings Over Westminster* (London, 1973), pp. 50-51.

The War Office Committee of Enquiry addressed the influence of discipline and morale on the incidence of shell shock in the BEF, finding that of the fifteen factors most influential in reducing the incidence of cases the most important were: Good Morale, High Standard of Discipline, Esprit de corps and Good Officers, especially as regards leadership.²² This thesis has established, not surprisingly, the same factors affected the rate of Flying Sickness in the RFC/RAF. It is argued here that in fact leadership is the predominate factor in producing good morale and where there is good morale aircrew failures are minimal. There are no First World War studies which confirm this, but the many similar studies of World War Two aircrew show that good leadership always induces good morale and greatly reduces failure rates.²³

The War in The Air

This study examines the incidence of psychological breakdown of aircrew involved in the air war over France. Therefore, an analysis of that campaign is a major part of this study. Chapters six, seven and eight cover the development and increasing intensity of that war.

²² *Cmd 1734* report, p.151

²³ D D Reid, 'The Influence of Psychological Disorder on Efficiency In Operational Flying', E J Dearnley & P B Warr (eds.), *Aircrew Stress in Wartime Operations* (London,1947), p.43; R R Grinker & J P Spiegel, *Men Under Stress* (McGraw-Hill, USA, 1963), pp. 37-38.

Although, Canadian, Australian, New Zealand and American aircrew flew with the RFC/RAF in the First World War, it has not been possible to calculate an incidence of flying Sickness for each nationality. However, some cases have been identified. In the case of Canada, five cases have been noted (identified by having served in a Canadian regiment before joining RFC). Unfortunately, it is not always the case that Canadian national identity is stated on casualty cards and Canadians serving with RFC/RAF were subject to the normal British medical arrangements. Similarly, Australian Squadrons serving in France were under British operational control and aircrew were treated under the same regime as RFC/RAF and not separately classified, but five Australian cases have been identified. There was also a significant number of aircrew from the other Dominions: New Zealand (200), South Africa (438) who are not identified as such on the cards, which also applied to Australians serving as individuals (that is not with their national forces).²⁴ Casualty cards for all these officers record service and squadron but unless the individual has served in a national regiment (which is usually noted on Cards) their nationality will not be revealed, therefore it has not been possible to identify any cases of Flying Sickness.

One other service was engaged in operations over France, the United States Air Service Squadrons. Apart from the Pursuit and Bombing Squadrons under US

²⁴ Molkeintin, *Australia and the War in The Air*, p. 26 and p. 86. The New Zealanders included Keith Park, a senior RAF commander in the Second World War.

control and operating independently (not examined in this study), from June 1918 the 17th and 148th Pursuit squadrons served with the RAF in France and their casualties are noted in the table below. Both squadrons were Scouts (fighter) squadrons and like the Australian squadrons fully integrated with the RAF and their casualties with squadrons recorded on RAF Casualty Cards.

Confusingly, many individual American pilots and observers were attached to RAF squadrons, including in the Independent Force, and did have their nationality noted on cards: four cases of flying sickness from this cohort have been identified. A major factor affecting the morale of squadrons and in turn the incidence of Flying Sickness was the casualty rate. In 1915, casualties were bearable, a total of 132, (KIA, POW, KIFA) and during that year, there were only five cases of aircrew suffering from a psychological disorder. (One of those was in the Middle East). It was not until May that combat reports were passed from squadrons to wing headquarters and from these reports a gradual increase of air activity and in air fighting can be seen.

In 1916, the number of RFC squadrons in France was increased to thirty-five and by December, casualties amounted to 550, a 316% increase over the year. The number of aircrew removed for psychological reasons was 20. In 1917 the intensity of the war over the front increased and the Germans, for a time obtained air superiority. In spring 1917, the Germans introduced the Albatross fighter, much superior to the standard RFC fighter at that time the DH2, although the

Bristol fighter was introduced, initially with heavy losses. April alone cost 316 aircrew killed or missing, with a further 9 killed in accidents. The official estimate of the length of operational service of aircrew (life expectancy) was about 3.5 months. In fact, at that time it was about three weeks.²⁵ Total casualties for 1917 were 1832 a 333% increase and the number of aircrew diagnosed as suffering 'flying sickness' (now officially used for psychological disorders) was more than doubled at 46.

The RFC (RAF from 1st April) regained superiority in the air in the last few months of 1917, which continued into 1918. Fighting was particularly intense in March following the halting of the German offensive. This change in the ground fighting also provided, for the first time, many perfect ground targets for aircraft, such as troops marching in columns and artillery batteries moving in the open. However, as already been noted, casualties in this type of attack were heavy, sometimes as high as 30% of aircraft engaged. One other effect of both the intensity of conflict was that both sides increased the strength of individual formations, leading to many large, and costly, 'dog fights' over the front. The Germans, partly, due to shortages of both aircraft and fuel, sometimes declined combat: as the inevitability of defeat on the ground became clear, the GAF made strenuous efforts to protect their ground forces with sweeps across the battlefield

²⁵ TNA Air1/683?21/13/2234; D Winter, *The First of The Few* (London, 1982) p.152; J Hamilton-Paterson, *Marked for Death: The First War in the Air*, (London, 2015), pp.137-138.

by combined squadrons, which also led to many air combats. Casualties in 1918 increased to a total of 2446 by the end of fighting in November, an increase of 33.5%. (last action by RAF was 10th November, with 12 casualties, 7 KIA 4 POW. Two of the seven were killed in a collision between two 46 squadron aircraft). The number of aircrew removed from flying duties for psychological reasons in 1918 was 615.

The Independent Force commanded by Major-General Trenchard, commenced operations in June 1918. These operations, the first serious attempt at strategic bombing, (and partly a response to German daylight raids on London) were flown by four squadrons operating in daylight and five by night. At first casualties were light but operations were hampered by the large number of early returns, particularly by Nos 55, 99 and 104 the day bombing squadrons. Many of these early returns were for engine failure, but a significant number were for crew sickness. Squadrons engaged on night bombing suffered fewer casualties than the day bombing units, partly because not until the last months of the war that they meet German fighters. The three squadrons noted above also suffered the most casualties, low morale, leadership difficulties and high numbers of aircrew failure. Of the 277 casualties incurred by the IF, 76.5% came from, 55, 99 and 104 squadrons and 66% of the flying sickness cases also came from these three. The total of 45 cases of aircrew breakdown in only five months of operations, partly due to the large numbers of inexperienced aircrew, seems to indicate that there

were problems with morale and in at least one squadron, (55) leadership. Two IF squadrons 55 and 99, were removed from operations for short periods after heavy casualties and shortage of replacements. The performance of the Independent Force overall was disappointing: unreliable aircraft, inexperienced aircrews, bad weather and effective enemy defence measures combined to frustrate this first attempt at strategic bombing. The results probably did not justify the casualties incurred.²⁶

The table below consolidates these figures and sets out the incidence of failure of aircrew serving on Western for the years 1915-1918. Aircrew numbers are based upon the number of squadrons at the front on the dates stated, taking account of as far as is possible, the variations in squadron strengths, and sets out the numbers in France at dates shown.²⁷ In 1915, a squadrons establishment allowed for 12 aircraft, this was increased to eighteen in March 1916 and further raised in March 1917 to 24, although some Independent Force aircraft strengths were set at twelve aircraft.²⁸ The squadrons aircrew establishment numbers are more complex. Obviously, 12 (18/24) aircraft requires that number of pilots (plus some observers if two seaters), but account must be taken of the squadron commander and often pilots training but not yet 'on' strength and on the other hand casualties, not yet

²⁶ Details of IF operations are in chapter eight.

²⁸ These were the night bombing squadrons flying the HP0/400 & HP1/400, twin engine with a crew of three.

replaced, (on average it took four days for replacements to arrive, very often needing further training).

The incidence of cases of flying sickness in Balloon Observers is based on the estimate of 40 balloon sections in BEF area in France in 1918.²⁹ That estimate shows some 360 observers in place, with 45 cases of breakdown, incidence of 12.5%. It has not been possible to verify casualty figures for Balloon observers.

RFC/RAF

<i>Date</i>	Sqdns	Pilots	Obs	Casualties	Cas/Rate	Fly/Sick	Incidence³⁰
Dec.1915	17	204	25	132	49.6%	5	2.2%
Dec.1916	35	630	60	550	79.7%	21	2.8%
Dec.1917	54	1296	780	1832	88.2%	46	2.1%
Nov.1918	93	2232	1046	2446	74.6%	615	18.7%

Independent Force (from June-November)

Dec 1918	9	162	252	277	66.9%	45	10.8%
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United States Air Service

Nov 1918	2	40	0	24	60%	4	10%
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²⁹P C Ford, 'The Practical Training of Balloon Observers' *Cross & Cockade Volume 35 (1) 2004* pp 13-21

³⁰Casualties include, Killed in Action, Prisoner of War, Killed in Flying Accident. Although all squadrons also had aircrew recorded as Wounded in action (WIA) many were noted as 'slight' or 'minor' and therefore wounds have been disregards as the effect on squadron strengths cannot be calculated.

RNAS Squadrons on Western Front. (until 1st April 1918)

Dec 1917	8	160	-	110	42%
Mar 1918	15	260	80	24	10%

The table based on the examination of casualty and incident cards, shows that up to the end of 1917, the wastage from flying sickness cases although significant, was bearable (that is, did not affect operational capability). Even though by December 1917, the number of cases of flying sickness had more than doubled, the incidence remained low. But in 1918, the RAF number of squadrons in France had almost doubled to 93, additionally, there was a great increase in the intensity of air operations and a large increase in casualties. There was also a very large increase in cases of aircrew breakdown. At least in part, this was due to the considerable number of inexperienced and inadequately trained aircrew (especially pilots) joining squadrons, their training had not shown them what to expect, and as already noted some squadrons in the IF had been taken out of the line to give extra training to replacements. It is also clear that on some squadrons (eg No 99, 55) morale had suffered, although an American report of RAF operations (including low level strafing) in 1918 noted 'the British had one great

advantage over the GAF, they had had air supremacy for so long that morale remained high'.³¹

As noted in chapter four treatment for flying sickness was inevitably a long process which required return to the Home Establishment. In only forty-six cases aircrew were discharged from hospital, 'returned to duty', sometimes to a specific unit such as an aircraft park or training unit, but few even of those pilots or observers having been given a few weeks leave or a home posting, returned to action in France. In fact, many of the aircrew diagnosed were still being treated at the end of 1918, and several casualty cards record treatment into 1920/22.

By 1918 the incidence of aircrew breakdown was such that it became a significant proportion of the wastage of RAF aircrew in France. The casualty rate in 1918 was 74.6%, adding the 18% of Flying Sickness cases raises the wastage to 92%. Official government figures for replacement pilots alone for 1918 showed; that to replace wastage in France for the period January-March 1749 replacement pilots were needed. For April to December 9752 were required, in addition another 200 were needed to replace operational wastage in England (mostly accidents), therefore the total number of pilots required was 11701. It took eight months to train a pilot and at the time of this estimate there were a little over 5000 in the system. However, allowing for the 28% wastage accepted in training and

numbers of casualties, it needed 1900 pilots a month to start training.³² These figures confirm the submission here that the incidence of flying sickness was a significant factor in the war in the air.

These figures also show that if the war had continued into December 1918, the RAF would probably have been forced to curtail operations because of aircrew shortages.

NCO and Airmen Aircrew

One omission from the casualty and breakdown numbers above is mention of the contribution of non-commissioned officers and airmen aircrew in the analysis of the air war. As noted in chapter one, NCO Pilots and observers were recruited almost from the start and many became casualties. It is estimated that in 1918, some 120-150 NCO pilots were serving on squadrons in France and approximately 800 NCO observers. There were also a number of air mechanics being used as air gunners, perhaps fifty or so. Although it has not been possible to investigate the numbers of NCO aircrew breakdown in this study, it is possible to record the casualty figures for NCO and airman aircrew and these are set out below.³³

³² Figures extracted from H A Jones, *The War in The Air* (HMSO, 1922), Volume V, Chapter VIII, pp. 425-435.

³³ In November 1918 the strength of the RAF was 27,000 officers and 247,161 NCOs and airmen. It is not practical to examine all medical records, but research into squadron records may be able to extrapolate those

NCO and Airman Aircrew Casualties. Western Front 1914-1918

Pilots		Observers/Gunners		Pilots	Observers/Gunners
KIA	PoW	KIA	PoW	KIFA	KIFA
23	13	146	82	9	35

Total = 390

The seemingly large difference in the numbers of pilot to/observer casualties is due to the fact that most observers were flying with an officer pilot, whereas pilots most often flew solo when in scout single seaters or if in two seaters carried officer observers.³⁴

Aircrew psychological disorder

This thesis is part of a continuum of study of the development of military psychiatry, beginning effectively with studies of the American Civil War and continuing with the Boer war and becoming fully recognized during the First World War when the vast increase in the scale of the problem caught the Army medical authorities by surprise and the recognition that psychiatric casualties were as important as physical wounds. Following the war an effort was made to

non-commissioned aircrew sent home for psychological breakdown. During this study two cases of NCOs suffering from flying sickness have been identified.

32 Figures extracted from T Henshaw, *The Sky Their Battlefield* (Fetubi Books, 2014).

understand the causes of the Shell Shock (Flying Sickness) and perhaps note lessons for the future. In 1922 the 'War Office Committee of Enquiry into Shell-Shock' chaired by Lord Southborough was formed, the terms of reference were:

To consider the different types of hysteria and traumatic neurosis ,commonly called 'shell shock'; to collate the expert knowledge derived by the service medical authorities and the medical profession from the experience of the war, with a view to recording for future use the ascertained facts as to its origin, nature, and remedial treatment, and to advise whether by military training or education, some scientific method of guarding against its occurrence can be devised.³⁵

As to causation, most psychiatrists believed the cause of shell shock was fear, the inevitable result of sustained and intense combat. Professor Rivers for example argued that shell shock was a '*hysterical defence against intolerable fear*'. However, the most impressive witness to the enquiry was Squadron Leader W Tyrrell DSO MC of the RAF medical services. He gave evidence as a medical officer, but he had also been removed from the front suffering with shell shock. He said:

Shell Shock is born of fear. Its grandparents are self-preservation and the fear of being found afraid. Any emotion which has to be repressed or concealed demands an unrestricted but well-concealed output of nervous energy. Craven fear is the most extravagant prodigal of nervous energy known. Under its stimulus, a man squanders nervous energy recklessly in order to suppress his pent-up emotion, and mask or camouflage that which if revealed will call down ignominy upon his head and disgrace him in the eyes of his fellows.³⁶

The committee agreed that shell shock was a meaningless term as the evidence showed that most sufferers were in fact suffering from a nervous breakdown

³⁵ Cmd 1734 Report p. 2.

³⁶ Cmd 1734 Report p. 31.

brought about by fear fatigue and horrifying experiences. The committee having accepted the medical view about the cause could only recommend 'suitable training' and the promotion of high morale as ways of reducing combatant failures with combat stress'.

In the years immediately following the First World War several reports upon the psychological effects of flying and the causes of psychological disorders were produced. Birley, in a report (1920) upon temperament and service flying drew attention to the individual nature of the pilots work and making the important point that suitability for flying does not automatically mean suitable for operations. Several reports by Birley (1923), Rivers (1920) Archer (1939) confirmed the view that psychological disorders were caused in varying degrees by fear at various levels of consciousness.

These reports seem to have been overlooked in the interwar years and as already noted, the RAF in the Second World War was surprised at the level of aircrew failure, after only slight to moderate amounts of combat stress. Response to this failure was prompt and the system of a nominated 'tour' of either, number of operational hours, or numbers of operational missions was implemented. Additionally, in Bomber, Fighter and Coastal Commands, wherever possible doctors were included in the squadron establishment, thus ensuring both medical advice to commanding officers and care of aircrew. In World War Two as in the First World War there was a steep increase in the number of psychiatric casualties

with the increase of operations. Concern about the rate of this aircrew failure led to the introduction of the term LMF (lack of moral fibre), introduced by the RAF Chief of Air Staff, to deal with cases of aircrew who 'will not face operational risks' LMF was to be used as an administrative procedure in cases:

Where there is no physical disability, no justification for the granting of rest from operational employment and, in fact, nothing wrong except a lack of moral fibre.

And it was further directed that:

cases of loss of moral among flying personnel should be frankly recognized and reported to higher authority and no attempt should be made to obtain posting action on other grounds.³⁷

Making LMF an administrative action enabled cases to be differentiated from genuine cases of psychological disorder (Neurasthenia, flying sickness) which not only avoided flying but which were also entitled to a war pension. There was (and still is) controversy about the introduction of LMF, commanders thought it necessary, but many aircrew felt that it could penalize some who had done their best, but still failed. Group Captain Cheshire, the most decorated airman of World War Two, thought it justified in a brutal war. On the other hand, Squadron Leader David Trafford-Clark thought it '*very harsh indeed*'³⁸ Noble Frankland DFC, the co-author of the Official History of the Strategic Air Offense

³⁷ E Jones, 'LMF: The Use of Psychiatric Stigma in the Royal Air Force during the Second World War' *The Journal of Military History* Vol 70 No 2 (2006), pp. 439-458 & p.442; C P Symonds & D J Williams 'Personal Investigation of Psychological Disorders in Flying Personnel of Bomber Command' *Air Publication 3139* (HMSO, 1947) pp. 31-64.

³⁸ E Jones, *LMF* p 440

and a bomber navigator felt that crews had to be denied sympathy and psychiatric treatment , *otherwise the 'the withdrawal rate would have produced a front line of green novices'*³⁹ In fact as noted above the numbers of breakdown by aircrew in the First World War contributed to the aircrew shortage and in the Independent Force, lack of trained aircrew was a significant problem.

In the Second World War, following the First World War procedure, a network of NYDN centres were set up. However, unlike the First World War practice, on arrival, aircrew were stripped of rank insignia and flying Badges. In fact, the system operated as though the man was a coward unless he could prove otherwise.⁴⁰ A major reason for this aggressively deterrent approach was the fear of contagion expressed by a number of senior commanders, “ that unchecked LMF could cause havoc in a combat squadron”⁴¹ This view was in fact held by the Air Minister, a First World War pilot who said:

LMF was dangerously contagious. One LMF crew member could start a rot which might spread not only through his own crew but through the whole squadron, particularly when there happened to a lot of inexperienced crews replacing casualties.⁴²

However, Balfour also described how following parliamentary misgivings about LMF being equated with cowardice, and thus leading to unfairness, it was decided

³⁹ Quoted by *Ben Shepard in War of Nerves*, (London,2000), p. 297.

⁴⁰ S C Rexford-Welch, *The Royal Air Force Medical Services, Volume II Commands* (HMSO,1955), pp.127-128 & pp. 260-261.

⁴¹ Wells, *Courage and Air Warfare* p. 194.

⁴² H Balfour (Lord Balfour of Inchrye) *Wings Over Westminster* (London, 1973), p.195

that all cases should be considered by the Air Minister before action was taken, and accordingly each case came before him for decision.⁴³

The causes of breakdown in the Second World war were the same as in the First. The report by Symonds and Williams noted above, stressed the negative effect of casualties on the morale of the squadron, but also noted the positive effect of good leadership.⁴⁴

Comparison of breakdown rates with the First World War is complicated but possible. In World War Two the RAF was not only much larger but consisted of many different operational roles including many not existing in 1918. However, a comparison can be made with Bomber, Fighter and Training commands, which in any case had most failures. One other difficulty is that the official figures produced in AP3139, are expressed in 'man-years', but the document explaining the concept also notes that the man-year rate is 'roughly the same as per cent average strength' (used in this study)⁴⁵.

The table below sets out the figures for psychological disorders and LMF in RAF Second World War aircrew:

⁴³ Ibid, p.196.

⁴⁴ Symonds & Williams, p. 49 & p. 53.

⁴⁵ C P Symonds & d J Williams, 'Clinical and Statistical study of Neurosis Precipitated by Flying Duties' in *AP 3139*, Chapter X, pp.140 -172, p. 140 & p.170.

	Neurosis	LMF
1942-43	2505	416
1943-44	2989	307
1944-45	2910	306

The incidence of psychological disorder was, in night bombers 12% , in day bombers 11.2%, in fighters 6%, in Middle East operations which included bombers and fighters 10.4% ⁴⁶ Bomber Command, which had very large casualty rates accounted for a third of all LMF cases and perhaps surprisingly, as all were volunteers, another third failed during training. One major difference between the two wars was the outcome of treatment of psychological disorders, in World War Two, some 30% of aircrew were returned to full flying duties and another five per cent to limited flying duties, as opposed to the forty odd flying sickness patients who were returned to duty in the First World War. Notwithstanding the differences in calculations, it is clear that the breakdown rate of aircrew on the Western Front in 1918, 18.7% was greater than the 1939-1945 rate, 10.0- 12.0% (depending upon command).

This study covers a hitherto unexamined area: the effects of combat stress on aircrew in The First World War. It has demonstrated that the intensity of combat

⁴⁶ Symonds & Williams, p.170.

and heavy casualties determines the incidence of aircrew failure. It has established the crucial role of good morale in limiting the scale of flying sickness. It has also confirmed the importance leadership in the shaping of morale. In order to achieve these results, the individual medical results of 27,000 RFC/RAF officers have been analyzed and coordinated to the operations undertaken by Royal Flying Corps and the Royal Air Force.

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